THE IRON AGE

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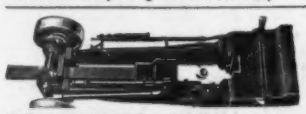

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See page 56

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SEE PAGE 23

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THE IRON AGE

New York, Thursday, December 26, 1907.

The Marmac Coke Drawing and Loading Machine.

Of the two classes of coke drawing machines, overdrawing and underdrawing, the Marmac machine, designed jointly by R. L. Martin, Jr., of the Bessemer Coke Company, and W. W. Macfarren, Pittsburgh, Pa., belongs to the latter. It consists of an extractor and conveyor. The extractor is fitted with a rack driven ram and the Thomas Smith wedge or underworking shovel. The special feature of the Marmac machine to which reference is made below are covered by patents, and comprise the conveyor, the method of driving and swinging the ram and that of driving the track wheels.

The track in front of the ovens on which the machine runs is tilted to the same slope as the bottom of the ovens, in order that the ram may work parallel therewith. The extractor truck consists of steel framing mounted on four track wheels. The horizontal swinging of the shovel in the oven is obtained by swinging the ram about an imaginary center, practically at the center of the oven door. In order to obtain this action, the ram with its driving motor and carriage, is mounted on a pair of curved guides, rigidly riveted to the top plate of the truck. The rear guide, taking the thrust of the entering ram, is composed of a 6 x 6 x 1 in. rolled steel angle, and the front guide receiving the pull of the outcoming ram consists of a 6 x 6 x ¾ in. angle. Mounted above these angle guides is a heavy steel casting, which serves

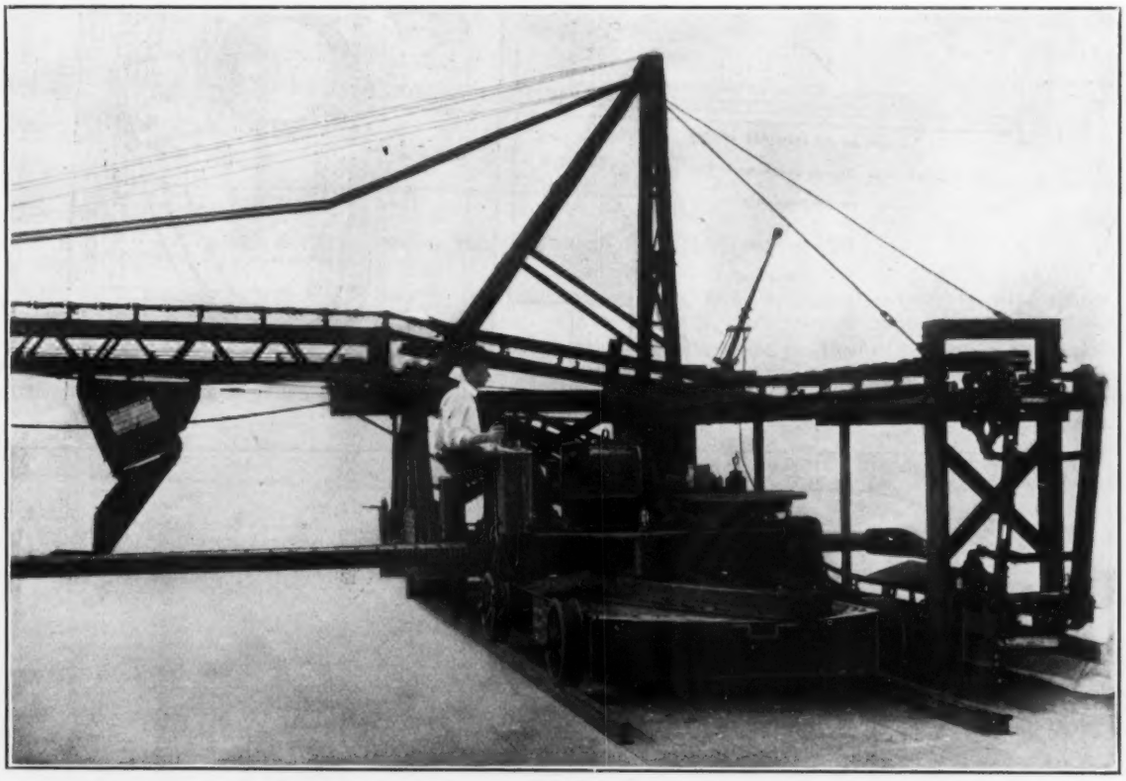


Fig. 1.—The Marmac Coke Drawing and Loading Machine.

The Marmac extractor and conveyor are mounted each separately on its own truck, with a drawbar connecting the trucks. The coke is drawn from the ovens by the extractor and falls upon the conveyor, which delivers it to the yard or a railroad car. Upon the extractor truck are mounted two motors, one for reciprocating the ram and another for swinging it. The conveyor truck carries a single motor, which is connected at will either with the conveyor, or to the track wheels on the conveyor truck, so as to move the whole machine along the track. These three motors provide power for the four motions of the machine, namely, reciprocating the ram, swinging the ram, driving the conveyor, and moving the machine along the track. All these motions are driven by friction clutches, so that there is a yielding point between the driving motor and the driven machinery in every case. The motor which recipocates the ram is a 25-hp. 220-volt Westinghouse machine, railroad type, with single hand reversing controller of the drum type. The motor and controller are water and dustproof. The swinging of the ram is performed by a 3¼-hp. type K Westinghouse motor of 220 volts. The drive for the conveyor and for the track wheels of the conveyor truck is by a 12½-hp. Westinghouse 220-volt shunt wound motor.

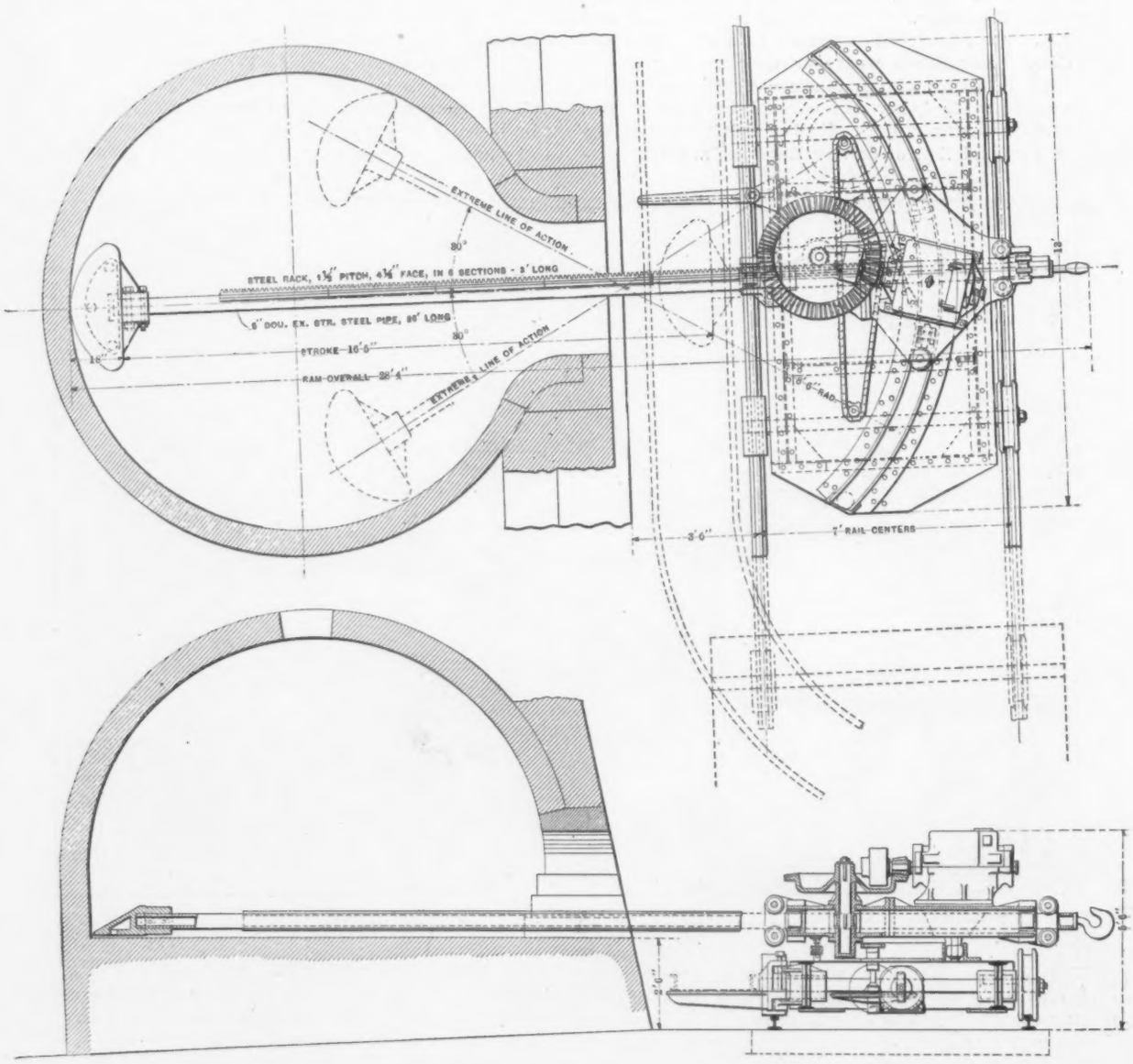
as a bed plate for the motor and gearing, and as a guiding frame for the ram. At the extreme outside corners of this casting are two steel rollers, mounted on vertical pins, these engaging the curved angle guides on the truck. The rollers constrain the ram to move at all times in lines radiating from the imaginary center at the oven door. Inside of these rollers are two others mounted on horizontal pins, which roll on the top plate between the curved guides and carry the major portion of the weight of ram, motor, gearing, &c. The motor and gearing are arranged on the opposite sides of the center line of the ram, in order to distribute the weight equally on these two rollers. To support the weight of the ram when it is near the oven door, a roller is provided directly under the center line of the ram and near the outside edge of the truck. At the front and rear ends of the ram guide casting are four rollers, surrounding and guiding the ram. The ram is composed of steel pipe 4 1-16 in. inside diameter, having riveted to it a cast steel rack of 4½ in. face.

In general, the construction of the extractor and the operation of the ram are shown in Figs. 1, 2 and 3. The armature shaft is extended beyond the armature pinion to carry a special multiple disk dustproof friction clutch, shown in section in Fig. 4. One member of the clutch

is keyed to the armature shaft and the other is bolted to the flange on the pinion. This clutch on the ram drive is fully inclosed. The friction surfaces are of metal running in oil, and the clutch can be adjusted up to its capacity to carry any desired load. This clutch, it may be said in passing, is adapted to any service requiring an automatic limit in the power applied, either for the protection of the motor or of the machinery driven. It is also built as a clutch coupling to connect two shafts. The reciprocation of the ram, through the construction indicated, with this special clutch provision, makes the operation of the machine substantially foolproof, since the operator cannot damage it either by running the ram within its travel by the movement of the controller handle.

As it is necessary to shift the railroad car being loaded along its track, to keep it in proper relation to the coke drawing machine, as it moves along in front of the ovens, the inventors have provided a means of doing this by power taken from the ram motor. This consists of a cast steel hook riveted to the rear end of the ram, as in Fig. 5, over which can be thrown a rope or chain, the latter being led around a snatch block or a snub post to the car.

The shovel is of cast steel in the shape of a curved wedge, the inside metal being cored out so as to leave



Figs. 2 and 3.—Plan and Elevation of the Marmac Coke Extractor.

too far into the oven or back against the stop. The construction is also designed to minimize the destructive action of the hammering of gear teeth on the reverse of the motor.

The main driving gear for the ram is a cast steel bevel gear with 5-in. face mounted on the top of a 3¼-in. vertical shaft. The pinion driving the ram is also of steel. The motor for swinging the ram is back geared by a pair of cut spur gears 3 in. and 14 in. in diameter. The back gear shaft carries a steel bevel pinion meshing with a steel bevel gear on a vertical shaft extending up through the top plate of the truck. A sprocket wheel on the top of this shaft engages a chain passing around an idler sprocket at the other end of the truck, and both ends of the chain are fastened to pins projecting from the underside of the main guide casting. By this mechanism the guide frame for the ram can be rotated to any point

1½ in. thickness of metal all over the outside. It is 40 in. long by 15 in. wide, by 8 in. thick at the rear.

To the inside of the extractor truck, between the ram and the rear truck wheel, there is provided a cast steel swinging support for the overhanging end of the conveyor. This support is hinged so that it can be swung sideways against the truck frame when the extractor is being turned on a turntable, for instance, and is also provided with a vertical adjustment by which it can be set up to sustain the weight of the outer end of the conveyor. The tail end of the conveyor is to extend back to include the previous oven, so that the coke remaining in the oven when the machine leaves it may be drawn directly into the conveyor by hand. This construction makes this end of the conveyor rigid under the falling coke. At the same time the conveyor is not fastened in any way to the extractor truck, so that if desired the

extractor and the conveyor may be separately turned on a short turntable about 10 ft. long.

The main supports for the conveyor consist of structural steel sections, mainly 6-in. channels, forming a tower. The overhanging framework at head end of conveyor is hinged to the supports so that it may be lowered from the extreme high position, to approximately a level position without interfering with the operation of the conveyor. The raising and lowering are effected by a worm geared hand operated winch and a ⅜-in. steel wire rope reeved round suitable sheaves. The conveyor proper consists of a single strand of special double jointed chain having steel flights 4 in. high. This chain is driven from the outer end of the overhanging arm and drags the coke with a continuous smooth motion from the oven door to the point of delivery, with no intermediate fall or change from one conveyor to another. The general contour of the conveyor is approximately that of an acute angled triangle with a sprocket at each corner, these being located in two vertical planes with a right angled curve connecting them. The lower or working strand of the conveyor extends horizontally from a point under the oven door for a distance of about 10 ft. and then rises on a continuous even grade of 5 in. per foot to the delivery end, passing around a curve of 8 ft. radius. The return strand of the conveyor runs parallel to the working strand from the head shaft back to the pivot point of the overhanging arm, and thence around an 8-ft. radius curve at a lesser grade than the working strand to a horizontal line above the oven door, whence it drops vertically over the tail sprocket to the idler sprocket at the point of beginning. On the bottom of the conveyor trough

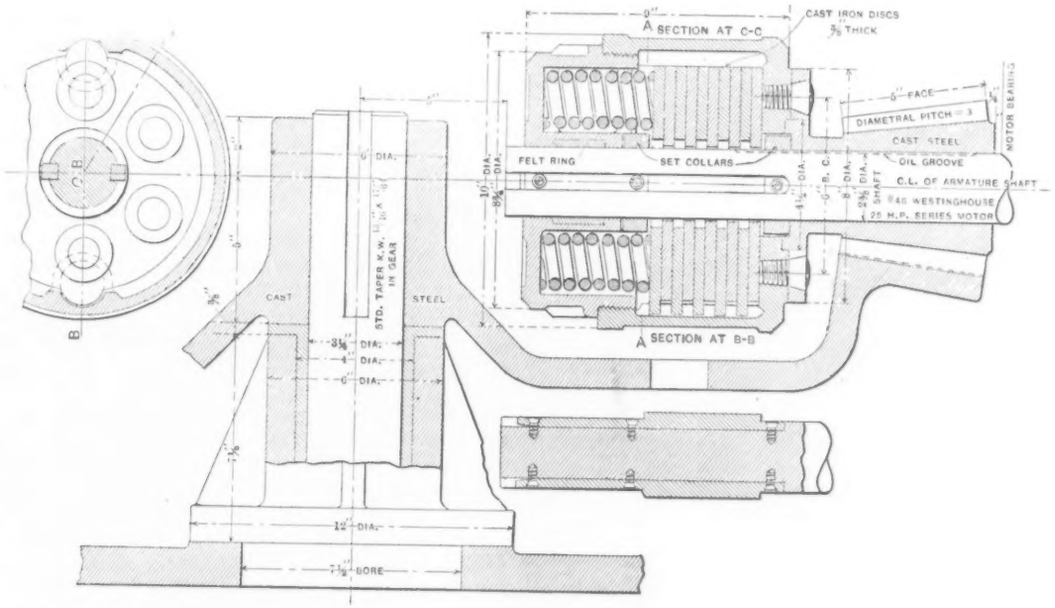


Fig. 4.—Special Spring Adjusted Multiple Disk Clutch on Ram Drive.

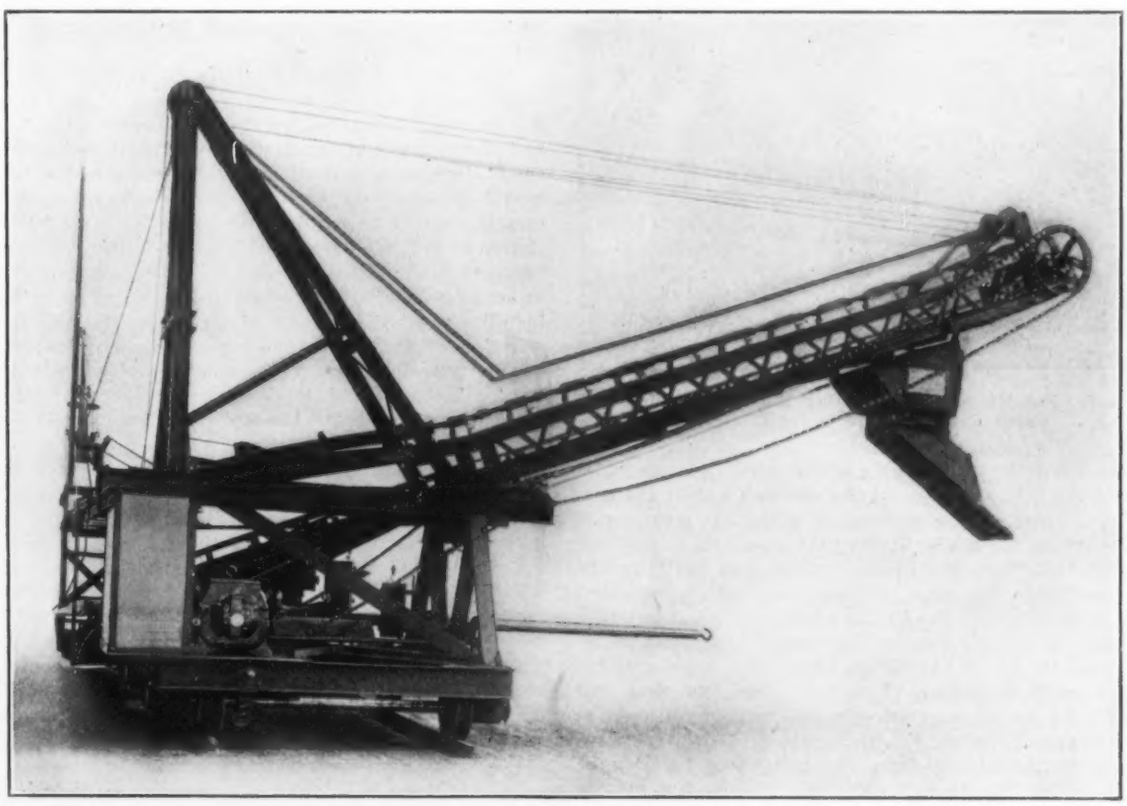


Fig. 5.—The Marmac Coke Drawer and Conveyor, with Boom of Latter in High Position.

is a screen for the separation of ashes and fine dust from the coke.

From the end of this screen to the end of the conveyor the bottom of the conveyor trough is composed of continuous hinged drop doors, about 2 ft. square, permitting of the delivery of the coke at any one of them. Thus the product can be delivered either into the yard for storage or over the end of the conveyor into railroad cars. It also permits of delivering into railroad cars on a curved or inclined track, which is at a varying distance from the front of the ovens, or to work successfully in two or more yards in which the track is at different distances from the ovens. In connection with the overhanging arm of the conveyor is a traveling trolley chute made of light steel plate and operated by a small winch

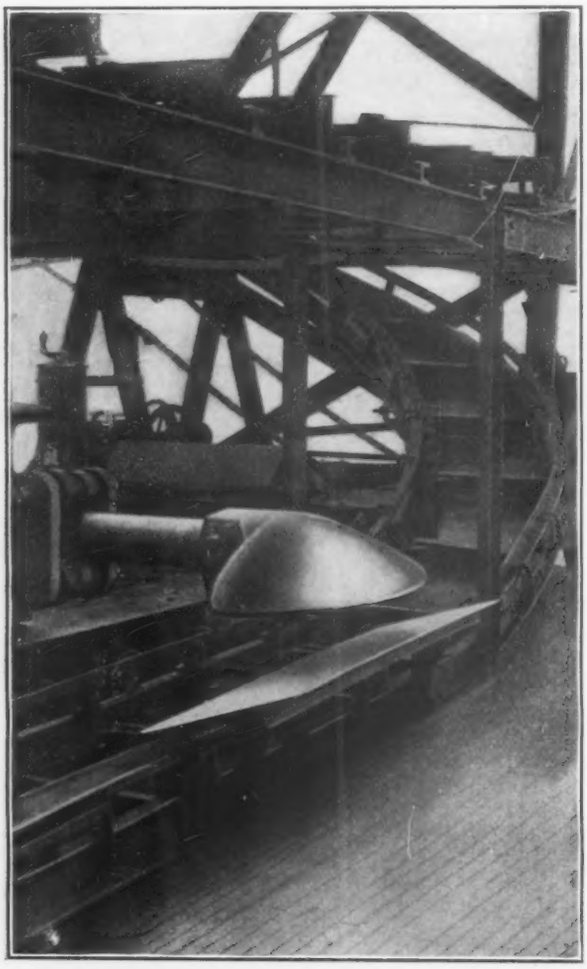


Fig. 6.—The Marmac Coke Drawing Machine, Showing the Shovel and the Curve in the Conveyor.

on the conveyor truck. This chute can be placed under any of the drop doors, or at the extreme end of the conveyor. It also can be swiveled on a vertical pivot, so as to deliver at any angle to the yard or a car.

The first Marmac machine, which was built by the manufacturers, Bollinger Brothers, contracting engineers, Pittsburgh, Pa., for the Griffin plant in the Connellsville region, has not yet reached its expected capacity of 50 ovens in 10 hr. It is stated that there were unusual difficulties in operation. For July, 1907, the first full month, the record was 863 ovens drawn, or an average of 34½ per day worked. In November 766 ovens were drawn in 20 working days, or an average per day of 38 1-3 ovens. Production was restricted in that month, due to falling demand. The average time required to draw an oven was 16 min. The machine has drawn three consecutive ovens in 20 min. The greatest number of ovens drawn in any one day was on September 4, 1907, when the total was 59.

Railroad managers are now stating that they have more equipment than traffic. Idle cars afford a strong indication of the extent of the check to business.

A Storage Battery for Steel Works Operations.

The Cambria Steel Company, Johnstown, Pa., some time ago installed a storage battery, since a large part of its electric power load is at a considerable distance from the generating station. Such a storage battery floating on the line, according to a recent pamphlet of the General Storage Battery Company, New York, by increasing the load factor, or the figure indicating to what extent the maximum capacity of the plant is utilized in average operation, effects a great saving in plant operation. An increased and steady voltage is maintained at the load, increasing the plant output at a much less cost than would be involved in increasing the generating equipment.

The Cambria Steel Company uses two large ore bridges and one car dumper, all operated by electric motors and supplied with current by a set of feeders from the main power house, the center of the load being approximately 3000 ft. from the power house. The work of these motors is of necessity heavy and intermittent, so that the load on the power house fluctuates widely. The momentary current values vary from 400 to 4000 amperes, equivalent to rapid fluctuations in load from 100 to 1000 kw. at 250 volts. Prior to the installation of the storage battery, 12 cables of 500,000 circular mils. were used as feeders (six outgoing and six returning), to supply the motors operating the ore bridges and car dumper. The voltage at the center of the motor load, at the same time, fluctuated through wide limits. It was found that the installation of a storage battery would maintain the voltage at the center of the load at a higher working value, would furnish a reserve in emergencies, and by dispensing with enough feeder copper to pay a good part of the cost of the battery. It was necessary, however, that the storage battery installed should go from charge to discharge, with small changes in voltage at its terminals; should be capable of being operated with little or no attention; should be able to withstand occasional overloads without detriment; and in emergency be able to stand fully discharged for short periods, without permanent injury.

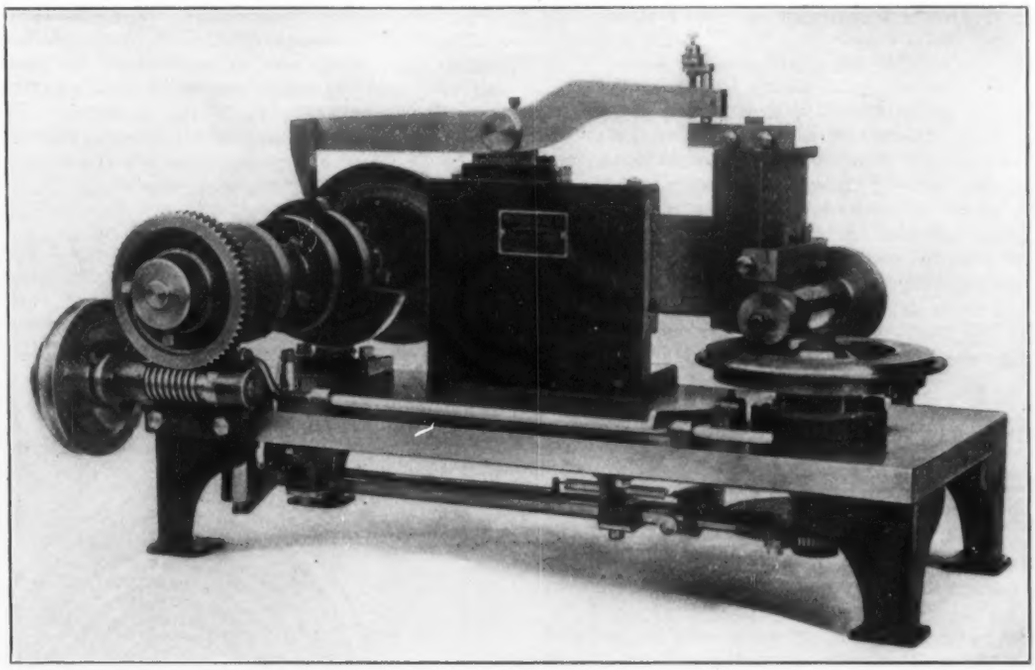
The battery installed is of the Bijur high duty type, consisting of 106 cells having a capacity of 2400 amperes for 20 min. Owing to the distance between the battery and the power station, it was found that comparatively small changes in current over the feeders to the battery would produce sufficient change of voltage at its terminals, due to feeder drop, to cause it to go from full charge to full discharge; in fact, the battery so situated removes the fluctuations from the power station to such an extent that it was not considered worth while to install a regulating booster at the power station. By the selection of the proper number of cells, the battery has been arranged so that while merely floating on the line, its total charge and total discharge over an extended period are equal, hence the state of charge of the battery remains substantially constant.

In order, however, to provide for an increase in the condition of charge, and to give occasional overcharges, required for best operation, a separately excited motor driven booster is installed in the power station. Provision is made for connecting the booster armature in series with the battery feeders, between them and the station bus bars, the voltage then being raised by hand regulation to the extent desired to overcharge the battery. This overcharging with the hand regulated booster is usually done at times when the ore bridges and car dumper are not in operation, although it may be done at any time.

Announcement of a 10 per cent. dividend to the stockholders of the National Steel & Wire Corporation was made at New Haven, Conn., December 19 by the receivers, Frederick B. Farnsworth and H. Stuart Hotchkiss. Preliminary reports gave no hope whatever of any dividend. According to the appraisal property amounting to $270,000, available for dividends, has been found. The plant was recently sold to the United States Steel Corporation, and turned over to its subsidiary, the American Steel & Wire Company.

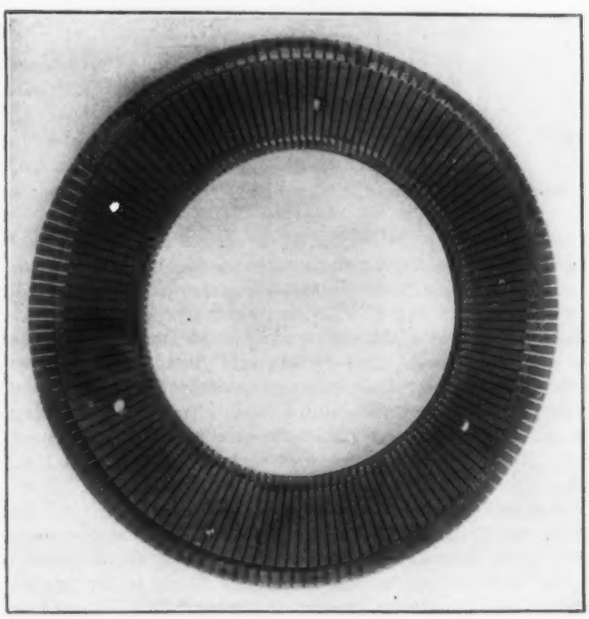
A Special Standard Disk Slotting Machine.

The special machine shown in the illustration is designed to cut automatically at a single operation slots in the face and rim of a disk. The machine is the more interesting because of its possible adaptation to a wide scope of work. The function of this particular machine is to cut slots in disks which are used in knitting machines, the machine having been built by the Standard Mfg. Company, Bridgeport, Conn., for the Mayo Knitting Machine & Needle Company, Franklin Falls, N. H. In general features the machine is similar in construction and design to the Standard automatic gear cutter, which was shown with illustrations in *The Iron Age* of April 5, 1906.



One of the Standard Mfg. Company's Automatic Gear Cutters Adapted to Slot Knitting Machine Disks.

The machine has two drives, one for the cutter, the other for the camshaft, to which power is transmitted from the pulley shaft through worm and worm gear, a clutch being employed to throw out the drive when desired. Cams mounted on this shaft accomplish the feed, return and indexing. The indexing mechanism, which is similar to that of the regular machine, has been placed below the base, instead of on the side, the change having been necessary because the work indexes in a horizontal instead of a vertical plane.



An Example of the Work Done.

The illustration shows the cutter in position to start the cut. It travels toward the outer edge of the disk until the cut is made in the face, and then vertically downward, making a right angle cut. This is accomplished by means of two cams: an internal cam at the extreme rear of the camshaft operates the ram or slide, while the nearer cam actuates the rocker arm which gives the vertical slide motion. The gear cutting machine of this type is designed to permit the cutting of any regular or irregular contour or angle of gear tooth, determined by the shape of the block at the top of the head against which acts the plug in the end of the rocker arm.

The two cams co-operate in cutting the right angle slots in the disk. During the horizontal travel of the cutter across the face of the work the rocker arm cam remains neutral, the direction of the cut being determined by the line of the block at the top of the head. When the face slot has been cut and the cutter has traveled to the proper point for cutting the rim slot, the horizontal slide ceases to act and the rocker arm cam comes into operation, causing the vertical slide to descend.

The indexing mechanism is so constructed that any number of teeth, from 1 to 15, can be taken on the index. After the ratchet has been carried the required number of teeth the index is locked, holding it positively firm while the cutter is doing its work. The disk is held in place on the table by means of a ring washer, expanded by the nut shown at the center of the disk. In order to take the strain off the index lock while a change of blank is being made, to avoid the possibility of throwing the machine out of alignment, a plunger is forced up into the work table by means of a heavy spring, locking the table. The plunger is withdrawn by means of a fulcrum lever, operated by a finger and thumb, and thus held until the index takes one tooth. The plunger then rubs on the under side of the table until the work has been completely rotated, when it springs into position to lock the table while the next blank is being inserted. The disks cut are of bronze, 8 in. in diameter, and the work has been done at the rate of 140 slots in 45 min., including the time necessary for changing the work.

The weight of the machine complete with the countershaft is about 225 lb. It is of the bench type and requires a space of about 30 in. long by 16 in. wide. The cutter is run at about 2000 rev. per min. The slide of the machine is arranged so as to make it possible to cut similar work from 3 in. to 8 in. diameter. While a large demand is anticipated for the machines to do the work de-

scribed, there are also numerous other applications to which it may be put with slight modification. One which has already been arranged for is the slotting of screw heads of all sizes and styles, using a hopper feed to introduce the work and make the operation continuous.

The Design of Complicated Castings.*

Special Methods Required in the Foundry.

BY WILLIAM A. BOLE, PITTSBURGH, PA.

Castings are often designed with a useless multiplicity of ribs, walls, gussets, brackets, &c., which by their asynchronous cooling and their inharmonious shrinkage and contraction, may entirely defeat the intention of the designer. He may find some of his walls, ribs or brackets cracked before the casting is cleaned. It is sometimes possible to remove such superfluous walls, ribs and brackets, and thereby obtain not only a lighter but a stronger and more dependable casting. It is highly essential that the designer keep in mind, as nearly as he can imagine, the cooling processes through which the

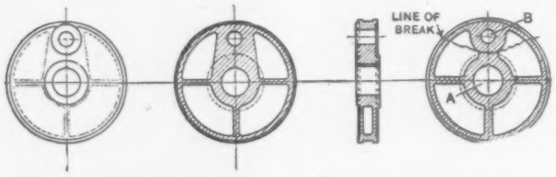


Fig. 1.—A Crank Disk Calling for Special Foundry Treatment.

casting must pass, and the effect which will be produced upon any given wall or member of the casting if it is cooled faster or slower than the other parts of the same casting.

The outer walls of a casting, that is to say, those which are more nearly adjacent to the sides and radiating surfaces of the flask, are naturally the first parts to lose heat, to begin to contract and decrease all their linear dimensions. The inner walls of the same casting, being more isolated from the conducting surfaces of the flask, may remain hot for a much longer period. As a consequence the outer members of certain castings may cool and take on their ultimate dimensions while the inner members are still very hot. The latter will of course ultimately cool off by conduction, but they will also continue to contract until at normal temperature, and their freedom of contraction may be prevented by the already determined dimensions of the outer walls. As a result there is likely to be violent tension strains in the interior walls of such castings. Sometimes these strains are sufficient to cause rupture while the casting is still in the mold. Sometimes the casting does not rupture until it is out in service; and even if it breaks in service the rupture may not be produced by stresses of engineering design, but may be due to the original asynchronous cooling of the various parts of the casting.

Equalizing the Rate of Cooling.

There are some castings which, by virtue of their shapes, can be specially treated by the foundryman, and artificial cooling of certain critical parts may be effected in order to compel such parts to cool more rapidly. The strength of the casting may by such means be beneficially affected. In the case of a flywheel with heavy rim but comparatively light arms and hub, it may be beneficial to remove the flask and expose the rim to the air so as to hasten its natural rate of cooling, while the arms and hub are still kept muffled up in the sand of the mold and their cooling retarded as much as possible. Or in the case of a flywheel with an ordinary weight of rim and arm but with a heavy hub, the hub may be exposed and compelled to cool more readily than it naturally would, while the arms and rim are kept muffled in sand, and the synchronous cooling above referred to is at least approximated.

It is often thought that large fillets are fine features of design in work of this sort, but many times they are highly detrimental to good results. Where two walls meet and intersect, as in the shape of a T, if a large fillet is swept at the juncture, there will be a pool of liquid metal at this point which will remain liquid for a longer time than either wall because of its lessened facilities for quick cooling; and this pool of liquid metal is bound to act as a feeder, supplying metal for other parts lower in the mold that may shrink sooner. The result in practically every case is a void or "draw" at the juncture point, bad enough in any case, but made worse by the presence of the large fillet. Of course there may be trouble from such intersections where no fillets at all are used, but the fillets should be kept small, with the idea of allowing both walls and juncture to remain as nearly uniform in thickness as possible, and to have as nearly as may be the same capability for simultaneous shrinkage and solidification.

Jacketed Cylinders.

Among other classes of difficult castings I would place jacketed cylinders in the list requiring careful consideration in design. In considering the case of a gas engine cylinder which is to be jacketed, the inner wall which resists the strain of explosion must be quite thick in order to afford the requisite strength against explosion pressures of ordinary nature and also against abnormal pressures due to preignition and other causes. A cylinder of this sort, whose internal diameter might be 40 in.,

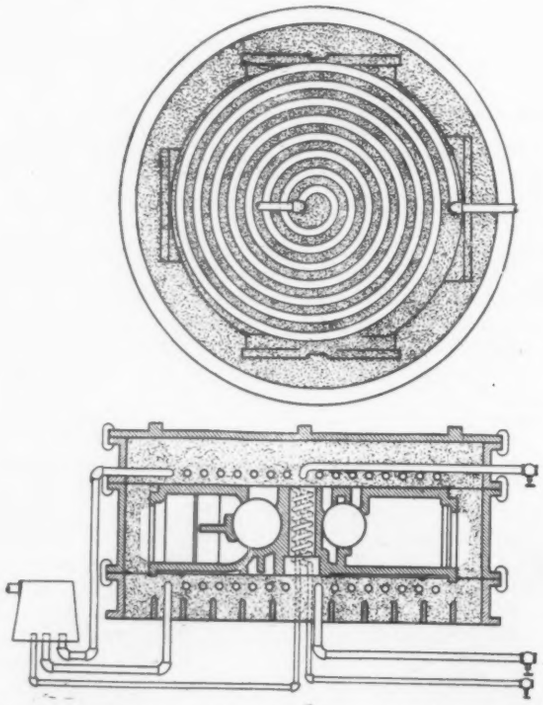


Fig. 2.—A Cylinder Head Mold Requiring Special Provision for Cooling.

could well have a thickness of cylinder wall amounting to 3 in. or more. The outer wall forming the jacket has only to stand the ordinary pressure of the cooling water, which might be quite low, often not exceeding 60 to 80 lb. per square inch, even where water is used direct from the city mains, and an outer jacket wall 1 in. thick might, on ordinary engineering assumptions, be regarded as ample to care for this pressure.

If the cylinder wall and the jacket wall are continuous; that is to say, if each extends rigidly from one end of the cylinder to the other, there is likely to be trouble when such a cylinder is cast or cooled. Even if it does not break at the start it is quite likely to break in service because a wall of metal 1 in. thick located out near the sides of the flask, which act as cooling media, will not shrink in time with the inner wall whose thickness is three times as great and whose opportunity for radiation is quite inferior. It is reasonable to expect that the outer wall will cool first; will take on its final dimensions while the inner wall is still very hot. At a later period the inner wall will shrink to normal temperature and will find that its desire to contract is restricted by the

* From a paper read at the New York meeting (December, 1907) of the American Society of Mechanical Engineers.

compressive strength of the outer jacket wall. The effect is a high degree of tension in the working cylinder wall. In such a case one good feature of design is to interrupt the jacket wall, so that the inner or working wall may have its own way and be unhampered in contracting; afterward it is closed up and rendered water tight by suitable mechanical means.

In such a case as that just cited, if the jacket wall must be cast continuous with the cylinder wall, it should not be designed solely in connection with its own theoretical stresses, but should be thickened up and made to approximate the working cylinder wall, so that it may cool down and contract more nearly simultaneously with the latter. Such outer walls, and all such attachments to a large casting, as bosses and pads, should be designed not alone out of consideration to the working strains which will be applied to them, but the tendency of the iron to chill at such spots must be considered. Ofttimes the pads or the bosses require to be made several times as large as mere reasons of strength would dictate, to avoid a hardening and whitening of the iron in thin sections that would prevent its being machined to required dimensions.

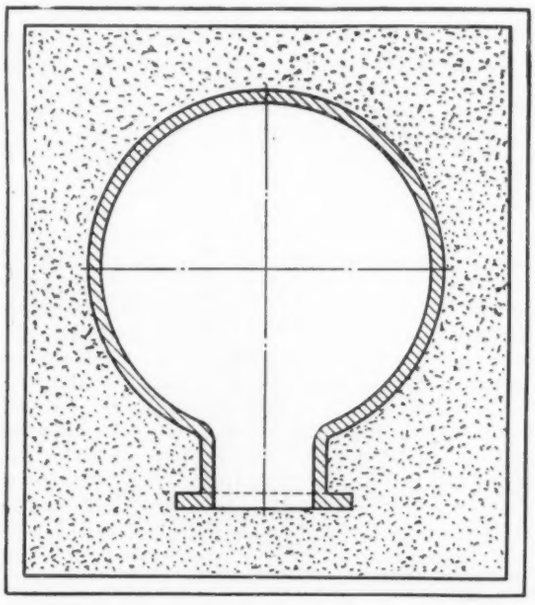


Fig. 3.—Mold for a Nozzle with Flange.

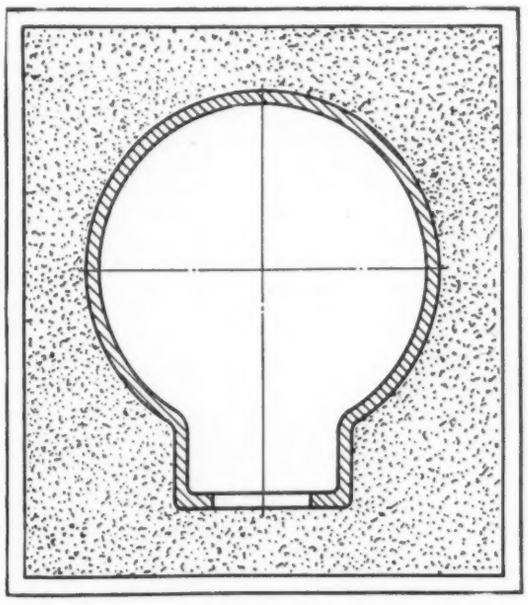


Fig. 4.—Suggested Design for the Nozzle in Fig. 3.

Handling of Cores and Risers.

After the foundryman has accepted the design and begun the work he may have several things to do in order to produce a reliable casting. If it is a cored casting he must guard against the cores being so strong that when confined within the contracting casting they will produce rupture of the metal. Among the usual means employed for producing a collapsible condition of core may be mentioned the use of sawdust or coke or ashes, or a combination of them all, some of which ingredients will burn out as the casting cools and provide thereby for a collapse of the core. In other cases removable pieces, collapsible core arbors, straw wrapped core arbors and the like, tend to prevent castings from cracking because of an unyielding core.

In order to serve engineering purposes, castings should be not only apparently sound but really so. For this purpose risers and sinkheads should often be employed on iron castings where they are not at present used. Steel foundry conditions compel such precautions to insure soundness, but in large iron foundry work interior cavities may exist without detection, and some of these may be avoided by the use of suitable feeding devices, risers and sinkheads. If risers are not employed, the upper or cope side of the casting is likely not to be solid, because of the metal in the upper portions flowing or bleeding away from the interior of these sections to feed the shrinkage and the contraction in the lower portions of the casting. The top surface of such a casting may apparently be solid, but if drilled deeply, as for stud bolts or other purposes, it is likely that cavities and extreme openness of grain will be disclosed. In some such cases good can be accomplished by the use of local chills placed under the top flange, if a cylinder, for instance, the chills setting the metal in the flange before it has time to feed out of this region into any lower portion.

Variations in Strength.

In some large castings intrinsic strength per unit section may not be a serious requirement. In other cases the engineering design may require high quality of material because high working strains per unit section are to be imposed upon the finished casting. In such cases engineering attention should be paid to the size of the test specimen which is to furnish an index of quality, and to the relation which exists between the strength of cast iron in light test pieces and that of the same metal when cast into heavy sections. The writer has taken specimens from an iron casting having at one point tensile strength as high as 30,250 lb. per square inch, and as low as 20,502 lb. per square inch in another and heavier section. The difference was wholly related to the thickness of the section and to the rate of cooling, with its consequent effect upon the grain. It might be said that large sections cannot be cast to yield the high strength that is sometimes associated in engineering minds with specimen test pieces cast in smaller sections of prevailing sizes.

It is well that the foundryman be acquainted to some extent with the purposes for which castings are intended. This will enable him to pay particular attention to such parts of the casting as are specially critical and to such as are to be machine finished. He can usually arrange to place his chaplets, anchors and core vents so as to keep them clear of the working or sliding machined surfaces, and he can then better provide for producing a casting which is a clean one at these critical points. The molder, if left to himself, will probably put chaplets and anchors directly in the path of a machined slide. Sometimes this kind of information would seem to be obvious, but often it is not so, and a hollow cylindrical casting with flanges on each end might, for all the molder knows, be a pipe having no special requirements; whereas it was intended to be a cylinder, which must be bored, faced and generally machined, and must be perfectly free from defects—a casting in which chaplets and anchors are utterly inadmissible.

Certain points on a large casting may require to be drilled and tapped and may demand a high quality at that spot. A suitably located chill will insure soundness and solidity here if the foundryman knows what is demanded; if he does not know, the casting is made, looks good to him, is shipped out, and when machined is found

to be hollow, cavitated or spongy at the critical spot.

In ordinary cases designs for castings should be such that it will not be necessary for the foundryman to pay particular attention to heat treatment, because in the press of other matters such treatment may occasionally be forgotten and omitted, or it may be imperfectly done by inexperienced men. A casting is best designed if it can be uncovered promptly after pouring, lifted out of its bed and deposited on the floor of the chipping shop. This is what is done with 95 per cent. of the output of the average foundry, and it is what the workmen are accustomed to. Special cases soon become irksome and some one will perhaps assume the responsibility of saying: "This special treatment is all foolishness and the casting is just as good without it." There are, however, cases in which it is necessary to design castings that do demand this special treatment.

A Special Crank Disk.

Fig. 1 illustrates a peculiar crank disk which was made in an iron foundry under the author's management some five or six years ago. The first casting was poured in the usual and ordinary manner, and after a decent delay in the flask was uncovered and removed to the chipping shop. It lay on the floor of the latter department for a day or two after cleaning; it was then shipped to the machine shop, which is located about 12 miles away. When the casting arrived at the shop it was found that a large piece had not only broken away from the balance of the casting, but it had jumped clear off the railroad car on which it was being conveyed, the missing piece being found by a track walker alongside of the railroad track a few hours after its loss was reported. The line of breakage is indicated in Fig. 1, and the missing piece weighed perhaps 1½ to 2 tons. This case was studied carefully. The heavier interior member, being the last of the casting to cool, had set up violent internal strains which caused the casting to rupture.

We arranged the next casting so that a few minutes after pouring had been done, a small stream of water in a regulated quantity was caused to drop into the hollow cores A and B, as shown on the sketch, compelling the hubs surrounding these cores to cool in advance of their natural time, and at least approximate synchronous cooling with the balance of the casting. The other portions of the casting during this period were kept muffled up in the sand and their cooling was delayed, while the cooling of the crank hubs was accelerated. After this method was adopted 12 such castings were made, all good, and they have been in service for some years.

Special Cooling Treatment.

The writer had to produce a number of large cylinder heads for Corliss engines, with ports for steam and exhaust valves formed in the heads. Structurally considered, the heads were like a cylindrical steam drum of large diameter but very short, having a flat head at each end, and were required to stand internal pressure. Considering the resistance to internal pressure, the cylindrical shell or outer wall could be designed quite thin as the strains in it were all tensile strains, while the heads, being flat and of great area, were subject to bending strains which demanded that these be greatly thickened up to make the flat surfaces, not easily stayed or braced together, strong enough to carry safely the pressure. In addition to this greater thickness of flat head, allowance had to be made for a machine finish on the flat surface, which was not required by the shell, and the disparity thus became still greater. The port openings for the admission and exhaust of steam made large holes in this head or flat plate, which were to be tied across ports by bars or ribs. In cooling by natural processes these bars almost invariably cracked in the casting, because the cylindrical shell being thin, cooled first, and was assisted in doing so by its position which was very close to the sides of the flask, where radiation was active. The flat head, on the contrary, was at the bottom of the flask, where radiation was poorer, and it was practically twice as thick as the rim and cooled more than twice as slowly. With these divergent tendencies trouble ensued. The rim cooled early and took on its final dimensions and in the form of a circle opposed to compression—the strongest possible shape. The head or diaphragm cooling later had its contraction tendency resisted by the stiff rim and a struggle was set up. The tension member was of course the weaker, and the large openings in the latter made the result a foregone conclusion. The diaphragm simply had to shrink or be stretched—the rim would not give—and the ribs broke.

We cured this trouble by the following means, as illustrated in Fig. 2: In the drag portion of the mold we placed a spiral coil of iron pipe through which we could circulate cooling water. This coil was placed as close to the face of the pattern as was considered safe, about 1½ in. away. The inner cores by which the head was hollowed out were also provided with similar interior cooling coils and the cope had a coil like that of the drag. After the casting was poured we waited for a few minutes to enable solidification to begin, and then we turned water into these cooling coils, and connecting the overflow to sewer connection, let the water run all night. The casting lay in the mold, the rim kept muffled in sand to delay cooling, while the coils close to the heads accelerated cooling. The result was most satisfactory and the castings produced by this process have stood the severest tests of several years continuous duty without failure. Heads of similar design made by other foundries cracked systematically, sometimes while the casting was still in the foundry, sometimes in the machine shop, but quite frequently not until after the engines were put into operation. In all cases the stress was there and the only question was *when* would it cause breakage.

It might seem almost unnecessary to say that flanges and other projections should be so designed that the molder may most easily produce the desired shape without having to use complicated means. If the designer or draftsman were a man who had a little practical experience in foundry work he would see numerous opportunities for making shapes that would "draw" easily, rather than certain other shapes that look well on paper but are much harder to produce. On work of considerable size a little more time required to deal with a detail may prevent doing any pouring to-day, with a strong probability that the molder can make that job last him "until to-morrow night." The designer should try to put himself in the molder's place and imagine himself making the mold in question. Then he will see what a small difference in design sometimes causes a big difference in cost and risk. An instance of this is Fig. 3, and represents a prospective nozzle with a flange for steam or water connection. If the flange in Fig. 3 is at the bottom of a complicated casting it will require the flange pattern to be cut into removable sections or a troublesome embedded core is required. If practicable to design as in Fig. 4, the neck draws naturally and the main core forms the flange. This sort of change may not always be possible, as certain designs will demand loose bolts, while Fig. 4 would call for stud bolts, but there are cases in which the foundry's troubles can be reduced in this manner.

Breakages are sometimes difficult to account for, and the designer may think the fault is with the quality of the iron, when in fact this has nothing at all to do with the trouble, the shape and design being the true cause. The "physics of the foundry" were not properly understood when the design was made.

It is some time since British rail mills have secured any orders from Victoria, Australia. A recent award of 8485 tons of 80-lb. and 100-lb. rails was made to R. W. Cameron & Co. of Melbourne and New York, who bid £6 17s. per ton, exclusive of duty, for rails delivered in cars at Williamstown Pier, Melbourne. The rails are being rolled by the Carnegie Steel Company. The last preceding order for Victoria, which was for 6282 tons, was placed at £5 13s. 6d. per ton.

The Norwalk Iron & Steel Company and the William Kavanaugh Mfg. Company, Norwalk, Ohio, will be merged as the result of a deal that was consummated a few days ago. The officers and stockholders will include the old ones of both companies. The new company will be known as the American Steel & Iron Company.

The Ames Dial Gauges.

The dial gauges shown in the illustrations, and made by B. C. Ames & Co., Waltham, Mass., are designed for quickly indicating measurements of small parts, or small differences in dimensions, where extreme accuracy is required. There are three distinct types of the gauge,

Fig. 1.—The Dial Jaw Gauge Made by B. C. Ames & Co., Waltham, Mass.

all reading to 0.001 in. or to 0.01 mm., if desired, through a multiplying mechanism consisting of a rack and a train of accurately cut gears and hardened, ground and polished pinions of large size, making them smooth running and contributing to accuracy. All of the devices are sub-

Fig. 2.—The Ames Upright Fine Gauge.

stantially constructed to maintain their accuracy when submitted to the handling they are subject to in ordinary use in the workshop.

The fine or jaw gauge, Fig. 1, is in effect a spring closing micrometer caliper, and has feet to stand on a bench. The jaws open parallel and will measure 0.2 in.

Fig. 3.—The Ames Gauge Head.

or 5 mm. The dial is enameled like that of a watch, and is provided with two hands; a large sweep hand registers the diameter of work, the other the number of revolutions the sweep hand has made. This gauge is particularly intended for fine measurements, such as the diameter of wire or the thickness of paper, sheet metal, &c.

The upright gauge, shown in Fig. 2, has on its dial one large hand which gauges the work. The table is made to revolve and has a fine adjusting screw to bring the hand to zero before a measurement is made. The bracket that carries the platen is ground and fitted to the upright of the stand, which is long, to give a large range, making it convenient to use with a block or any special device necessary to compare work under test with given standards.

The gauge head, Fig. 3, is similar to that on the upright gauge, and is used for testing or measuring of various kinds, as for example, in connection with a center indicator, a snap or limit gauge or a surface gauge. It is fitted with a back suitable for attaching to any kind of a mounting, so that it may be used to test for eccentricity of work in a lathe or disparity in the parallelism of two surfaces. The train is of the spur type of gearing, as in a watch, and is amply strong to withstand hard usage.

Reports are published in England of the conclusion of an agreement between Armstrong, Whitworth & Co., Vickers Sons & Maxim, Ltd., and a Japanese company known as the Hokkaido Colliery & Steamship Company, for the establishment of a steel plant at Muroran on the southern coast of Hokkaido. Of the capital of £1,000,000 half is subscribed by the British companies and half by the Japanese company. The latter will supply the coal and the English firms the iron and the engineering staff. In addition to the production of steel the company will manufacture ammunition and will build ships. The British firms will dispense with agencies in the Far East, and this part of their business will be taken over by the new company.

The next monthly meeting of the American Society of Mechanical Engineers will be held Tuesday evening, January 14, in Assembly Room No. 1 of the Engineering Societies Building at 29 West Thirty-ninth street, New York. The subject will be "Car Lighting," and R. M. Dixon, president of the Safety Car Heating & Lighting Company, will treat of the general subject of lighting trains, showing relative economies in the several systems, electric and gas. Exhibits of different methods, such as the Pintsch mantel, the vapor mantel system, a new acetylene system, and several varieties of axle lighting by electricity, with their regulating and governing mechanism, will be in operation.

On December 13 C. W. Ferguson was appointed receiver for the J. Thompson & Sons Mfg. Company, Beloit, Wis. This company, which was established in 1860, has a capital stock of $500,000, and has been engaged in the manufacture of automatic cut-off gas engines and suction gas producers. The plant has been shut down pending an examination of the company's affairs and a tabulation of its assets. Payment of its payroll has for some weeks been made in due bills, and a considerable sum is owing to employees. For 45 years the company was engaged in the manufacture of agricultural implements, its present line having been taken up only two years ago.

The shipyards on the Clyde launched in the first 11 months of this year 318 vessels, with an aggregate tonnage of 532,600. This compares with 282 vessels of 550,800 tons for the first 11 months of 1906. Last year several very large vessels, including the Lusitania and Agamemnon, were completed, this accounting for the larger tonnage with a smaller number of vessels in 1906. It is unlikely that the promise in the early part of 1907 that this year would exceed all others will be fulfilled. Work in hand is rapidly coming to an end, and some of the largest yards are now without a keel. The new contracts going upon the books are quite meager.

The Firth-Sterling Steel Company, Pittsburgh, has filed a certificate of increase in its capital from $800,000 to $1,000,000.

The Racine Power Hack Saw.

The saving of time, blades, material and the attainment of more accurate cutting are the advantages claimed for the automatic lift draw cut power hack saw illustrated. It is a product of the Racine Gas Engine Company, Racine, Wis., and was originally designed in

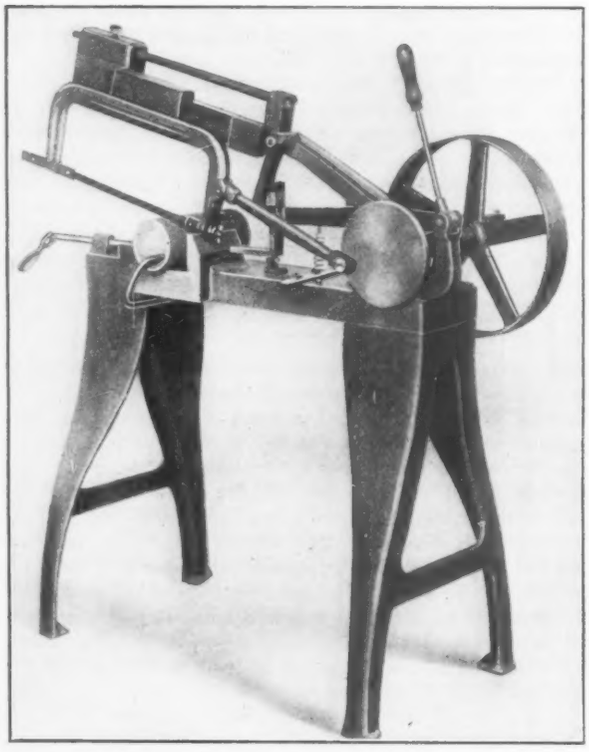


Fig. 1.—The Automatic Lift Draw Cut Power Hack Saw Built by the Racine Gas Engine Company, Racine, Wis.

an endeavor to overcome the difficulties had with existing machines. The inventor had occasion to cut large quantities of machinery steel, and was harassed by the annoyance of the saw becoming so dull before a cut was completed that it ran out of true from ¼ to ½ in., or broke, requiring a new blade to finish the cut and the turning over of the heavy bar. This took the work of two men to do, wasted time and material, and compelled the facing of the cut material afterward in a lathe. The remedy, as the inventor saw it, was an arrangement for lifting the saw clear from the work on the idle stroke, and he designed such a device and placed it on an old machine. Thereafter he had no trouble, it is claimed, in making six cuts with one blade, and the cuts were practically perfectly true even when the cut was within 1-16 in. from the end of the bar. The success had with the machine led to its being patented and its manufacture taken up by the company, which now offers it as a machine capable of doing as high grade work as a cold saw.

The saw will cut any shape of material, such as rounds, squares and all kinds of structural shapes, as well as pipe and brass tubing. Tests, it is stated, have demonstrated that this machine will cut six times as much material with one blade as the common hack saws, and that it will cut a disk from 6-in. crucible machinery steel 3-64 in. thick with a variation in thickness not exceeding 1-100 in. These results are all accredited to the fact that the dragging of the saw back over the work on the idle stroke is done away with. It not only increases the life of the blade by reducing the wear on the teeth, but by allowing time for the blade to cool somewhat between cuts, it is possible to operate it at a greater speed.

The view given in Fig. 1 shows the general appearance of the machine, and Fig. 2 designates the parts, from which it will be easy to understand the operation. At *a* is shown a weight which is moved backward or forward on the bar *b* to regulate the feed. The saw frame is carried by the guide *c*, which is in one casting connected to the driving shaft to avoid joints and connections which are likely to get out of line. The guide is extra heavy and has a large wearing surface with provision for taking up wear. The saw frame *d* is also very heavy to eliminate vibration and springing. This frame is slotted to receive a special device *e* for holding the blade square with the vise, and special provision is made to carry blades 10 to 14 in. long, according to the work to be sawed, so that the full value of the blades may be realized. A screw for tightening the saw blade is shown at *f*. The handle *g* for operating the vise is permanently attached to the vise screw, so that it is always in place. When it is desired to cut duplicate lengths the gauge *h* is employed. The main drive is taken from the clutch pulley *j*, controlled by the lever *i*, which is of diameter sufficient to drive the machine at its full capacity without the use of reducing gears. To regulate the depth of the cut when that may be desirable, the screw *k* is provided. The saw guide is lifted by the cam *l* mounted on the main shaft and having a greater radius on one-half of its circumference than on the other. The lever *m*, mounted on the bracket *n*, carries a roller *t*, which is held in contact with the cam by the spring *s*. The cam revolving raises and lowers *m*, which carries two dogs *o* side by side. When the lever is raised the dogs engage the ratchet bar *p* and the saw is held clear of the bottom of the cut, and when the lever drops the dogs are disengaged, permitting the saw to be lowered into its cut. An automatic stop slide *q* is connected to the lower end of the clutch lever *i*. At *r* are shown knockout blocks, provided with screws to take up wear, which are connected to the slide *q*, and the latter pulls back a given distance, which causes the dogs to be engaged with the ratchet bar whenever the saw is stopped. The saw frame can therefore always be hung at any desired hight by increments of 1-32 in. within the full capacity. This is very convenient for the operator in measuring pieces to be cut, as the saw can be positioned close to the work.

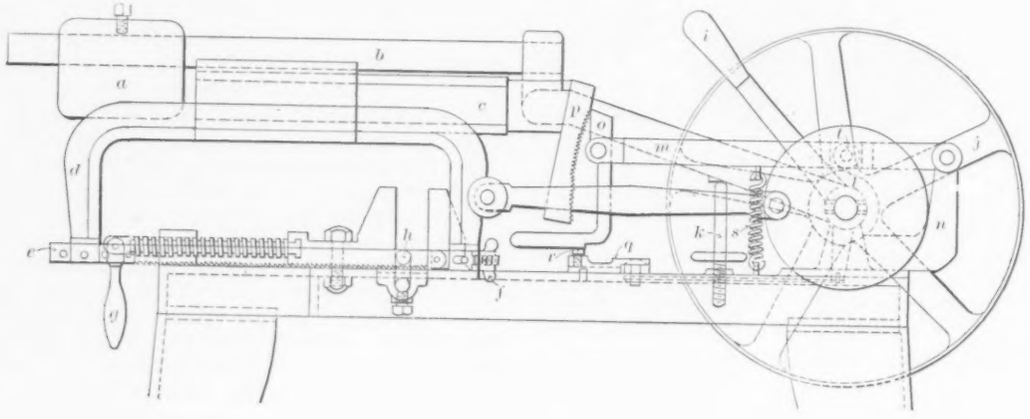
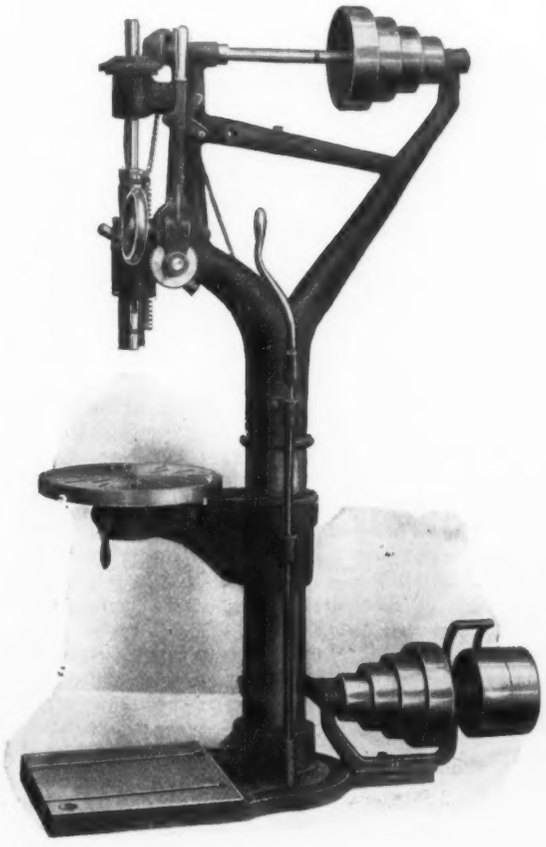


Fig. 2.—Detail of the Mechanism of the Racine Power Hack Saw.

The New Silver Power Drills.

A line of power drills, redesigned to meet the exacting requirements of modern machine shop practice, has been developed and is now being manufactured by the Silver Mfg. Company, Salem, Ohio. These tools comprise four distinct styles, which include power drills with plain lever feed, combined lever and wheel feed, power feed and automatic stop, and power feed with back gearing and automatic stop. All of these drills are furnished with either a round or square base as desired.

The tool illustrated herewith is a 20-in. combined lever and wheel feed drill with square base. It is so constructed that either the lever or the wheel may be used to control the feed, independently of each other. The table is fitted with a convenient and easily operated up and down adjustment, and swings freely in either direction. Four speeds are supplied by step cone pulleys, driven by a countershaft with tight and loose pulleys 8 in. in diameter by 2¾ in. face, designed to run at 300 rev. per min.



A New 20-In. Drill Press Built by the Silver Mfg. Company, Salem, O.

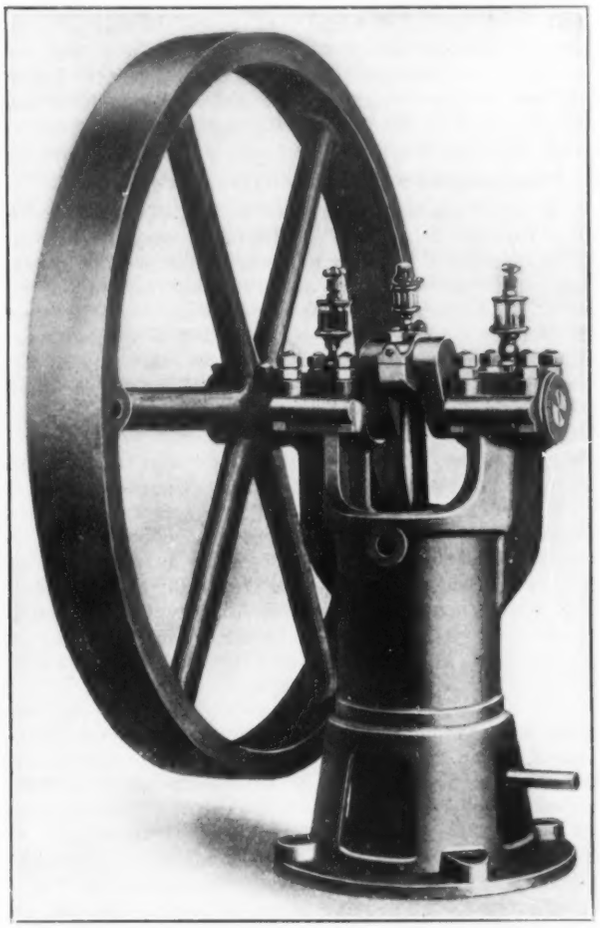
This equipment is suitable for drilling only, and when tapping and drilling are to be done a friction countershaft is required. When fitted with the power feed and automatic stop device the drill will stop automatically at any required depth. This action is entirely independent of the wheel or the lever feed, either of which can be used in addition. This tool has also a back gear friction mechanism, by means of which four slow speeds are provided for heavy work, making a total of eight different speeds. The bevel gears driving the drill spindle are cut from solid blanks, and the cog rack is forged from steel, the teeth being milled to gauge. The spindle drive is geared with a ratio of 1 2-3 to 1 with the drive shaft.

The column and frame of the drill are proportioned with a view to strength and symmetry, and in its make-up the tool is designed to meet the requirements of general shop work. The principal dimensions of the tool illustrated are as follows: Hight, 68¼ in.; diameter of table, 16 in.; diameter of spindle, 1⅜ in.; socket, No. 3 Morse taper; vertical travel, 16 in.; distance of column from center of table, 10¼ in.; greatest distance from spindle to base, 41⅛ in.; greatest distance from spindle to table, 26⅝ in. The large pulley on the cone has a diameter of 9¼ in., stepping down to 4 in. for the smallest. When furnished with the round base the drills occupy a floor space of 20 x 36 in., and with square base 16 x 46 in.

A New Westinghouse Air Compressor.

The line of standard steam and motor driven air compressors manufactured by the Westinghouse Air Brake Company, Pittsburgh, Pa., has been extended by the addition of the small belt driven compressor illustrated. The new compressor carries a 3 x 4 in. cylinder, has a 12-in. diameter base and weighs complete 218 lb. It is compactly constructed, so that it may be installed in limited spaces where power from shafting or a small motor is available. It is particularly adapted for such service as gas engine starting, automobile garage use (inflating tires and cleaning), charging storage tanks for pneumatic tools, machinery cleaning and in general for supplying compressed air at high or low pressures in small quantities.

The compressor is of the vertical single cylinder, single acting, water jacketed type, operated by power delivered to a 30-in. flywheel, attached to the crank shaft. The rated capacity of the pump is 4 cu. ft. of free air per minute at a speed of 250 rev. per min. It will operate against a pressure of 250 lb. At its rated speed, which gives the maximum efficiency and against a pressure of 200 lb., approximately 1 hp. is required to drive the pump. A constant circulation of water is maintained through the jacket to decrease the temperature of the air discharged. This has the effect of increasing the efficiency of the compressor and at the same time greatly reduces the deteriorating influences which would attend overheating due to prolonged operation.



A New Small Belt Driven Compressor Manufactured by the Westinghouse Air Brake Company, Pittsburgh, Pa.

THE THEORY OF HIGH SPEED TOOL STEEL.

Conclusions Drawn from a Comparison of Authorities.

BY GEORGE AUCHY, PHILADELPHIA.

Improvement in metallurgical processes has been almost entirely a record of achievement by practical men, unaided by theorists. Rarely, if ever, has the chemist or the theoretical metallurgist blazed the way, but has for the most part contented himself with following in the rear of practical accomplishment, explaining the reason for it all. The development of high speed tool steel has been no exception to this rule. From first to last it has been accomplished by practical metallurgists. But yet the theoretical metallurgists have not been idle—they have indeed followed up their practical brethren so closely that the manufacture of high speed steel has hardly settled down to a permanent groove before the theory of the phenomena connected with it is completed and ready. This theory has gradually unfolded itself under the master hands of Osmond, Böhler, Le Chatelier, Carpenter and others, and to the labors of these investigators the monumental work of Dr. Guillet has been a fitting climax, so that now the general theory would seem to stand out clearly and distinctly. Now that the theory is at hand, it would be interesting and instructive perhaps to compare theory with practice, and see how far the one is corroborated by the other, and how the composition of high speed steel indicated by theory to be the best, agrees with the "mix" almost universally in actual use in the steel trade.

The Osmond Theory of Allotropic Conditions.

In reviewing the theory, to start at the beginning, we must consider briefly the conflicting theories of the constitution of steel at different temperatures evolved by Mr. Osmond on the one hand and Professor Arnold on the other. According to the former authority, iron or steel exists in three allotropic conditions, which he designates alpha, beta and gamma: In mild steel, alpha up to 720 degrees C.—750 degrees C. (Arnold); beta between these points and 810—830 degrees C., and gamma above these last temperatures. Alpha iron is soft, beta is very hard, and gamma medium hard. But in pure iron the beta and gamma forms can never be retained in the cold. Quench as rapidly as we may, the beta and gamma conditions change to the alpha ahead of us. But when carbon is present in sufficient quantity it "acts as a brake" on this transformation, and we can then trap the beta condition by quenching or rapid cooling, but still not the gamma, except by quenching at more than 1000 degrees C., and then only partially and mixed with martensite (beta iron).

We can obtain the gamma condition with ease and certainty by alloying with the iron another metal (manganese, nickel, chromium, tungsten or molybdenum), but the alloys of the two last must first be heated to 1200 degrees C. to destroy the double carbide first formed. Chromium also forms double carbide (if very high) in large quantity, in which case the gamma condition can be obtained without quenching—the steel is "self-gamma," so to speak—and is stable at ordinary temperatures if not verging too closely on the beta. In steels in the alpha condition the iron and carbon are combined as carbide of iron or cementite. This cementite in high carbon steels (over 0.95 per cent.) exists in two different forms, according to Professor Arnold physically different but of the same chemical composition, Fe_3C, as free cementite and as cementite intimately mixed with ferrite (pure iron), to form what is known as pearlite. But in steels where the carbon is under 0.95 per cent. all the cementite is in the pearlitic form—that is, it is intimately mixed with ferrite—and there is no free cementite, but free ferrite instead.

When the steel is heated to over 710 degrees C., the carbide of iron or cementite, either free or pearlitic, is decomposed or dissociated into iron and carbon, the latter existing in a condition of solid solution in the former, while the steel is in the beta condition, and also while it is in the gamma condition, and returning to the carbide condition only when the steel returns to the alpha condition, which it does on slow cooling. The solid solution of carbon in beta iron is called martensite, the distinctive constituent of hardened steels, and the solid solution of carbon in gamma iron is called austenite, and is not so hard as martensite and is tough instead of brittle. Alpha iron is magnetic. Beta and gamma are not magnetic.

The Arnold Theory.

The theory of Professor Arnold denies that there is any proof of the existence of three allotropic forms of iron and ascribes the difference in the properties to difference in the chemical composition of the carbide, which, according to him, is never normally disassociated into its original elements at any stage of heating in the case of steel, although this point of dissociation is one which the allotropists do not insist on. On the contrary, such high authorities as Howe, Sauveur, Stead, Heyn and probably Osmond himself, are always careful to express their belief that it may be carbide and not carbon that is dissolved to form martensite and austenite, but exists all through from the cold condition to the fused, but not as the same carbide all through.

The free cementite carbide is Fe_3C, and the pearlite carbide is also Fe_3C, which is hard, but not hard enough to counteract the softness of the ferrite with which it is intimately associated in pearlite and to give to the steel the general quality of hardness. But heat the steel, and at 710 degrees C. the affinity of the carbon for the iron becomes so greatly augmented that it is able to hold in combination 24 atoms of iron instead of only 3, so that at this temperature the hard Fe_3C of the pearlite takes up and combines chemically with the soft ferrite (iron) of the pearlite to form a new and intensely hard carbide $Fe_{24}C$, which Professor Arnold calls hardenite, and which corresponds to the martensite of the allotropists. This carbide, being not only hard in itself, but also not being intimately mixed any longer with soft ferrite to form pearlite (the ferrite having been taken up and now forming part of the carbide) imparts to the steel itself the quality of hardness. If the steel be over 0.89 per cent. carbon, or "supersaturated," or "hypereutectoid," and consequently contains no free ferrite but free cementite (hard) along with this very hard hardenite, then the steel itself is very hard indeed.

But the steel is not so hard, although still very hard, if it be unsaturated or "hypereutectoid," and contains at this stage ferrite along with the hardenite. Continue the heat now to 900 degrees C., and the cementite, if the steel be over 0.89 per cent carbon., or the ferrite if it be under 0.89 per cent. carbon, dissolves in the hardenite to form a homogeneous molecular mixture corresponding to the austenite of the allotropists, and in so doing modifies the extreme hardness of the hardenite so that the steel, while still hard, is not so hard as in the preceding condition.

Here it is interesting to note that if Professor Arnold's theory be true gamma high carbon steel should be harder than gamma low carbon steel. For in the first case it is a solution of hard cementite in hardenite, while in the second it is a solution of soft ferrite in hardenite. This, if true, has an important bearing on high speed steel manufacture since Mr. Taylor has led the way in making these steels gamma. For in that case it is a mistake to adhere to a carbon percentage of 0.50 to 0.70 per cent., and the steels should be of as high carbon as possible to get the advantage of greater hardness. Mr. Taylor's reason for comparatively low carbon was originally to avoid brittleness and unforgeability. But when, in aiming at high speed, he increases his tungsten and chromium to such a point that the steel becomes gamma, these reasons no longer have application. For in that case the higher the carbon the more thoroughly gamma, and gamma steel

is tough and not brittle. And again, gamma steel is forgeable, according to Mr. Taylor, who forges at a light yellow instead of a cherry red heat, which changes his martensitic steels to gamma or partly gamma. So it would seem that if we make a high speed tool low carbon gamma we get the quality of high speed or red hardness in the highest degree, but with the disadvantage of hardness not being what it might be, or what it ought to be perhaps for some work; whereas, if we make it high carbon gamma, accepting Professor Arnold's theory, we should expect to get a steel just as high speed and at the same time harder.

Points for the Practical Man to Consider.

But it is not necessary for the practical man to consider whether the theory of Osmond or the theory of Arnold be true. All that is necessary to understand, at least in this connection, is that steel may exist in three conditions according to temperature: 1. Alpha or at first and for the most part pearlitic (soft), and at the end martensitic (very hard); 2. Beta or martensitic or hardenitic (very hard); 3. Gamma or austenitic (medium hard). The transformation points of these conditions are in unsaturated or hpyoeutectoid steels (steels under 0.89 per cent. carbon) at these temperatures; from pearlitic (soft) to martensitic or hardenitic (very hard) at 710 degrees to 730 degrees C. (Ac_1); from alpha iron to beta iron at 730 degrees to 750 degrees C. (Ac_2), the steel in this beta range being still martensitic or very hard; from beta iron to gamma iron, and from martensitic (very hard) steel to austenitic (medium hard and tough) steel at 810 degrees to 830 degrees C. (Ac_3). In steels over 0.89 per cent. carbon (super saturated or hypereutectoid steels) these three transformation points, Ac_1, Ac_2 and Ac_3, merge into each other at 710 degrees C. to 730 degrees C.

The Introduction of Certain Metals Lowers the Transformation Point.

Now introduce another metal—nickel, manganese, chromium, tungsten, molybdenum, but not vanadium—into the steel and two wonderful things happen. In the first place these transformation points are lowered, and in proportion to the amount of the added metal until when enough of the added metal is present, these transformation points are lowered below ordinary temperatures, so that the steel is martensitic or very hard without any quenching whatever. In other words, it is self-hardening, and if we go further and put still more of the added metal into the steel it becomes gamma or austenitic (medium hard and tough) at ordinary temperatures and without quenching.

But all the above mentioned metals do not act in precisely the same way. Nickel and manganese are the only ones that are exactly as we have described. In the case of chromium the effect is to lower the transformation points at least in presence of carbon according to Dumas (but disputed by Professor Carpenter, who declares the opposite), as we have described, and to make the steel martensitic or self-hard if enough be present, but if still more be then added, according to Dr. Guillet, the effect is not to put the steel in the gamma or austenitic condition, but instead a soft, brittle, double carbide of iron and chromium is formed. But if the steel be heated to a high heat (1200 degrees C.) this double carbide is destroyed, and the chromium and carbon thus set free then act to put the steel in the gamma or austenitic condition, persisting at ordinary temperatures.

In the case of tungsten and also of molybdenum a soft, brittle, double carbide is formed as with chromium, but with this difference, that it is formed from the start when there is but little in the steel. There is no lowering of the transformation points, whether the tungsten or the molybdenum is low or is high, until the steel is heated to a very high temperature, when this double carbide is then destroyed, and the tungsten or the molybdenum is then free to work to lower the transformation points and to make the steel martensitic or self-hard, or to make it gamma or austenitic (medium hard and tough) if still more of the tungsten or of the molybdenum be present. In other words, tungsten and molybdenum steels are not self-hardening except they be heated almost to the melting point.

But here is to be noted a peculiarity. If nickel, chromium or manganese be also present in the steel to a considerable amount, then, without any of this high heating, the nickel or the chromium or the manganese destroys a certain proportion of the tungsten double carbide, and the limited amount of tungsten thus set free then, of course, acts to assist the nickel, the chromium or the manganese in making the steel self-hard. In other words, tungsten or molybdenum when alone in steel has no self-hardening effect (except at a heat of 1200 degrees C.), but does have it to some extent in the presence of nickel, chromium or manganese. In making clear this point Dr. Guillet has performed an important service. We see now that the old self-hardening steels were made under a very mistaken idea. Instead of tungsten being the self-hardening element, it was manganese and chromium that really did the work, with tungsten getting all the credit for it.

To repeat: Tungsten or molybdenum when alone in steel forms a soft, brittle, double carbide which must be destroyed by heating the steel to 1200 degrees C. before the tungsten or molybdenum can work to lower the transformation points. But when nickel, chromium or manganese are also present in considerable amount, this formation of double carbide is to some extent hindered or checked, and the tungsten or molybdenum then does, at once and without the heating to 1200 degrees C., have some self-hardening effect.

Coming now to vanadium, Dr. Guillet finds that the double carbide also formed in this case cannot be destroyed at any heat, and vanadium therefore does not lower the transformation points of steel nor impart the temper resisting quality. In other words, it makes a steel neither self-hardening nor high speed.

Alloy Steels Resist Temperature Much More Than Carbon Steels.

Coming now to the second wonderful thing that happens when a second metal is made to alloy with iron in considerable proportion, alloy steels possess the property of resisting tempering or of retaining their hardness at a temperature much above that which will soften an ordinary carbon steel. This is a more wonderful and more valuable result than the lowering of the transformation points. But here it must be explained that this part of our theory is so far pure assumption only, and not yet confirmed by facts so far as we are aware. That other metals added to steel lower the transformation points of the steel is not theory; it is fact; it has been amply demonstrated. But that the temper resisting quality is a part of the same phenomenon—that is, that every metal which lowers the transformation points of steel also and to the same degree makes the steel temper resisting or high speed—is as yet pure theory whose claim upon respectful consideration rests solely upon inherent probability.

Now with this theory before us what would we make the constitution of our high speed mix provided we knew nothing of all the practical work that has been done? In selecting a metal to put in our steel to make it high speed, we would, of course, choose the cheapest metal that would do the work, and do it well. We would not select a metal that formed a soft, brittle double carbide which had to be destroyed by a very high heat (and then not completely) before the steel would harden or red-harden, and which at the same time was very expensive. We would first try a metal which did not form double carbide at all, and the cheapest metal that did not form double carbide. Manganese obviously would be the first metal we would try. The next question is, how much manganese? Obviously again, the greatest possible amount in order to get the greatest possible red-hardness; that is to say, enough to make the steel gamma at least. Then what carbon? Since we know that it requires much less manganese to bring a high carbon steel to the gamma condition than it does to bring a low carbon steel to that condition, for economy's sake we would make the carbon as high as possible, and undisturbed by any fear of brittleness because gamma steel is tough and not brittle. But yet we would move with some caution in this, because Dr. Guillet's experiments indicate that high carbon

gamma steels transform more readily by use into the martensitic or hard and brittle form.

Theory Points to a Conclusion at Variance with Practice.

The conclusion then that theory brings us to is that high speed tools should be made from high carbon Hadfield manganese steel. It is hardly necessary to state that this conclusion is entirely at variance with the universal practice. High speed steel is neither made with manganese, nor is it made high carbon. That Hadfield manganese steel for some good practical reason will not serve we may be sure from the fact that it is not used. But it would be interesting to know what this reason is. Perhaps after all the difficulties connected with the use of manganese as a speed giver, instead of chromium and tungsten, whatever they are, are not insuperable. But assuming that they are insuperable, the question then is, why must both chromium and tungsten be used at the same time? If they are alike and equal in their action there is nothing to be gained by using them both at the same time, and if they are not alike, and one is better than the other, then there is something to be lost in using them both at the same time.

Referring to the work of Dr. Guillet and of Dr. Taylor for light on this point, we find that as a matter of fact chromium and tungsten are not alike and equal in their effects, chromium being evidently considerably superior. From the table of experiments given by Dr. Guillet on page 125 of the *Journal* of the Iron and Steel Institute for 1906, Vol. 2, where high speed steels of varying composition are quenched at 850 degrees C., or not enough heat to completely destroy the double carbide, we see very plainly that high tungsten high speeds are much more difficult to harden (and to red-harden, according to the theory that the red-hardness is a part of the same phenomenon as the lowering of the transformation points), than low tungsten high speeds and still more difficult to harden than high chromium high speeds, provided the chromium is not high enough to form double carbide. Moreover, it would seem from his following table that when hardened at 1200 degrees C. the high tungsten high speeds are not so hard (and presumably, therefore, not so red-hard) as these others. The reason must be that with much tungsten the soft, brittle double carbide is not destroyed entirely by the high heat given the steel for that purpose, and the higher the tungsten the greater the proportion of undestroyed double carbide.

Superiority of Chromium Over Tungsten.

But with chromium the case is entirely different, because no double carbide is formed at all, according to Dr. Guillet, until the chromium reaches 10 per cent. in an 0.80 per cent. carbon steel (or 15 per cent. in 0.20 carbon steel), and the structure is not completely double carbide until 18 per cent. chromium is reached; whereas, in tungsten steels the structure is completely double carbide after 4.5 per cent. tungsten. So it is easy to understand why high tungsten high speeds are so much more difficult to harden than high chromium high speeds, provided the chromium is not high enough to form double carbide. It is the difficulty of destroying the double carbide, and from the evidence of Dr. Guillet's table of experiments the conclusion can hardly be avoided that, on account of this double carbide difficulty, tungsten in a high speed steel is nothing more than an indifferent substitute for the right thing.

Turning now to Mr. Taylor's article for further information on this point, we find that our impression that tungsten is but a poor sort of a substitute is deepened and confirmed by his experiments. He finds that a mix of C 0.70-Cr_5-W_{19} gives a steel of a cutting speed of 60 or close to it. Increasing the tungsten in this mix he finds lessens the speed, while increasing the chromium to 5.5 per cent. raises the speed to 99, and leaving out all the chromium deprives the steel entirely of all high speed properties. Consulting now Professor Carpenter, we find the statement that chromium is the main constituent in the high speed mix. So on all sides we see evidence of the inferiority of tungsten as a speed giver; yet not one of these authorities even hints at such a thing as dispensing with it.

Let us see what their several objections to an all-chromium mix are, and consider whether these objections are valid. Mr. Taylor's objection is that chromium alone gives no high speed properties. When he found that tungsten without chromium would not work (perhaps because he did not allow any longer time at the high heat) he promptly jumped to the conclusion, it seems, that the high speed property came not from tungsten alone, nor from chromium alone, but from the two together in steel. But we see that if he had had more patience and had tried chromium alone, he would have come to a different conclusion, for Dr. Guillet who tried chromium alone (practically alone, Cr_{10}-W_2) found that it made an excellent high speed steel with this objection only, that it was martensitic, or self-hard, and hence difficult to work. This is Dr. Guillet's objection to an all-chromium mix, that much chromium makes the steel self-hard and difficult to forge, or, if still more of it be used, it makes the steel gamma or too soft, he thinks, for a high speed tool.

It is interesting to note that this objection to chromium of Dr. Guillet is in flat contradiction to Professor Carpenter's objection. The former objects to it because it does a certain thing, and the latter because it does not do that same thing. Dr. Guillet deprecates the use of much chromium because it lowers the transformation points and makes the steel martensitic or self-hard (and therefore difficult to work), or, if still more be used, it makes the steel gamma (and therefore too soft). Professor Carpenter deprecates the use of much chromium because it does not lower the transformation points (and therefore has no high speed or red-hardening effect). According to Professor Carpenter, the function of chromium in the high speed mix is simply and solely to destroy the tungsten double carbide (or cause complete solution of the elements, as he puts it). That chromium does do this we may readily concede. For we see that Dr. Guillet's experiments even on ordinary self-hardening steels indicate the same thing.

Tungsten, no matter in how large amount, does not make steel self-hard so long as it is alone in the steel, but when chromium or manganese is also present, then to a limited extent the tungsten is captured, so to speak, and dragged along and made to help the chromium or manganese make the steel self-hard. That is, a certain proportion of the tungsten double carbide is destroyed by the chromium or by the manganese. Then if we heat up to 1200 degrees C., what more natural than that more, and much more, of the tungsten double carbide gets destroyed by the chromium? So we need have no hesitation in following Professor Carpenter's theory so far. And if he is right also in his other point, that chromium itself has no high speed effect, then, of course, the present high speed mix is strictly logical: Tungsten to red-harden, chromium to make the tungsten available for that purpose by destroying or helping to destroy the tungsten double carbide, the tungsten and carbon thus released then hardening and red-hardening the steel.

But even so, the question must be asked, why use a metal which has to be driven to its work by some other metal, and is at best never completely subdued? We see that there is a certain waste involved in the use of tungsten. The double carbide does not get entirely destroyed. Why not then use a metal which, like nickel or manganese, does not form double carbide at all, and which therefore would not require any chromium to get it to work? But we need not indulge in any rainbow chasing on this point. Both Taylor and Carpenter have promised us efforts to cheapen the high speed mix, and if the result of these promises is that the latter announces that the present mix is about a finality, and the former has nothing more to say, then we may safely set it down as a fact that for some reason nickel and manganese will not do.

What Is the Matter with an All Chromium Mix?

This brings us back to our question, what is the matter with an all chromium mix? Is Professor Carpenter right in his theory that chromium is not self-hardening, and therefore not red-hardening? The evidence to the contrary, at least when carbon is present, is overwhelming, and, to top all, Dr. Guillet makes an actual trial of an all chromium steel (practically all chromium C 0.20-Cr_{10}-W_2), and finds it makes an excellent high speed tool. So we can hardly believe that Professor Carpenter's ob-

jection to an all chromium mix is a valid one. Then there remains to be considered Dr. Guillet's objection that chromium in much quantity makes the steel martensitic or self-hard, and therefore hard to forge; or, if still more be used, it makes the steel gamma and therefore too soft.

According to Dr. Guillet, a high tungsten is the ideal high speed mix for the very reason that tungsten forms a double carbide destroyed only with difficulty and by a great heat. This, he would claim, is tungsten's chief recommendation, and is something not to be complained about, but to be grateful for. It is a lucky dispensation of Providence, for it enables us to forge easily, using a low and careful heat, and then, when forging is done with, all we have to do is to heat up to 1200 degrees C., and, presto! we get the hardness and the red-hardness. Whereas, if we use chromium altogether, it is true, he would say, that we would save considerable expense, and there would be less waste or no waste at all through failure of the double carbide to be completely destroyed, but of what use would this be to us if the steel was self-hard and unforgeable?

This objection is plainly a very important and weighty one, but when we turn to Mr. Taylor's work we find it is not an insuperable one. We see that Mr. Taylor runs into precisely this difficulty, the difficulty of self-hardness and unforgeability, when he raises the chromium in his mix from 2 to 3 per cent. to 5.50 per cent. (making it C 0.70-Cr 5.5- W_{10}), but we see further that it is a difficulty that does not daunt him, but that on the contrary he finds a way to get round it, and a very effective and ingenious way it is. Instead of forging at the usual low and careful heat, he boldly strikes out in the opposite direction and heats to a light yellow, whereby enough of the tungsten double carbide is destroyed, so that the steel is converted from the martensitis or difficultly forgeable condition to the gamma or easily forgeable condition.

But in putting enough chromium into his steel to make it gamma or partly gamma when finished, he of course runs into Dr. Guillet's second objection to chromium, that it makes the steel gamma and therefore too soft if much be used. But this objection Dr. Taylor finds is not a good one. Gamma steel is not too soft. Since Dr. Guillet has become acquainted with Mr. Taylor's practical results, it is probable that he has entirely changed his opinion on this point. So that we see that Dr. Guillet's objection to an all-chromium mix would apply only if the carbon and chromium were high enough only to put the finished steel in the martensitic condition, and that this objection would not apply if these proportions were still higher, so that the steel finished in the gamma is in at least partly gamma condition. For gamma steel is not hard to forge, neither is it too soft for a high speed tool, according to Mr. Taylor.

The end to be aimed at, then, in making an all-chromium mix is to make the steel gamma or partly so, not only to avoid the difficulty of forging but also to get the advantage of higher speed combined with toughness, an advantage which Mr. Taylor has gained in his latest mix. But in doing this we get into the same disadvantage, although to a less degree, that attaches to the use of tungsten, and that disadvantage is the double carbide which forms when we put enough chromium into the steel to make it gamma, and which can only be destroyed at a heat of 1200 degrees C. So although chromium is better to use than tungsten, because the structure is not entirely double carbide until 18 per cent. is used in an 0.80 carbon steel, whereas with tungsten it is entirely double carbide at 4.5 per cent., and because the double carbide is more easily destroyed, yet it would seem obvious that it would be better still to use a metal which, like nickel or like manganese, formed no double carbide at all, provided of course, such a metal had no defects of its own in other respects.

As before stated, that there are such defects we may infer from the fact that these other metals are not used. In the case of nickel, indeed, there is one defect that is obvious—the large amount of it needed to make the steel reliably and permanently gamma. But this defect does not attach to manganese, which, moreover, has the great advantage of cheapness. Theoretically it is hard to guess why Hadfield manganese steel does not serve, although of course, it is plain that its difficulty of being machined would bar it from some uses.

A Mix Theoretically Advantageous.

A mix that theoretically would seem to be an advantageous one would be chromium in amount just short of enough to form the double carbide (the double carbide begins to form after 10 per cent. chromium in an 0.80 carbon steel, according to Dr. Guillet), with enough manganese then added (perhaps 3 per cent.), so that the sum of the chromium, manganese and carbon is high enough to make the steel gamma.

As before stated with regard to carbon, theory indicates that carbon should be high, as, according to Dr. Guillet, the higher the carbon the less tungsten and chromium would be required to give the same high speed effects. Mr. Taylor, on the contrary, states emphatically that carbon has nothing whatever to do with it. "Experiments indicated that as far as the effect of cutting speed is concerned, it was a matter of indifference whether low or high carbon was used," he says, the three experiments in his tables bearing on the point confirming entirely his statement. But yet we cannot be entirely satisfied that he is right and Dr. Guillet wrong. We think that in these experiments it has happened that the heat treatment has nullified the carbon; that is, it has happened that in all these three experiments less of the double carbide was destroyed than usual.

That carbon has no influence on cutting speed, other things being equal, is hard to believe. The fact that a high carbon steel is more susceptible to any influence, good or bad (thus, for instance, a high carbon steel will self-harden when a low carbon steel will not), than a low carbon steel is a fact so well established and so familiar to every practical man that we have to find it hard to believe that here, in the matter of red-hardness, nature has reversed her laws. Moreover, as Mr. Taylor is careful to point out, the experiments he makes show that in this matter of red-hardness there is some other factor than chemical composition. The same mix gives sometimes different results, and different mixes sometimes the same results.

Thus, for instance, we see chromium reduced one-half, the mix otherwise remaining the same, and yet the cutting speed not altered a particle. Now, if we would deduce from this that chromium had no high speed effect, and that it was a matter of indifference whether the chromium was low or high, we would of course be greatly in error. So, too, we might be in error in deducing from his experiments that the percentage of carbon was a matter of indifference. There is some other factor than chemical composition, and a factor so important that it at times completely masks the effect of chemical composition.

Heat Treatment an Important Factor.

That factor is the heat treatment, or, in other words, the destruction of the double carbide. That is, if a high speed steel of the right composition gives poor results, or if the wrong composition gives good results, it is because the heat in the one case has not been, and in the other case has been, high enough or long enough continued to destroy completely the double carbide. Dr. Guillet always uses the word "dissolve" to describe this phenomenon. But to us it seems that the idea of complete destruction, and not simple solution, is more expressive of the facts. The simpler and better to be understood theory is the theory that the carbon cannot harden (that is go into the hardenite combination), and the tungsten cannot act to lower the transformation points and to give the temper resisting quality, so long as they are locked up in this sofe, brittle double carbide combination. That this combination must be actually destroyed and not merely dissolved, it is reasonable to suppose. Mr. Taylor's own theory for the unknown factor is that it is oxide in the steel and that vanadium takes it out.

So, although it is quite true that three of Mr. Taylor's experiments bear out the idea that the percentage of carbon has no influence on the cutting speed, and none of his experiments show the reverse of this, still, in view of the obvious improbability of this idea (high carbon steels in general being so much more sensitive to all influences than low carbon steels); in view also of Dr. Guillet's

opinion to the contrary of this idea, and his experiments to the contrary, we cannot yet feel convinced that Mr. Taylor is right on this point, and we have to think that high speed steel should be high carbon in order to get the greatest high speed effect with the least expenditure of added metal.

In one point practice and theory coincide. Theory indicates that the high speed tool should be gamma steel, even although some hardness is thereby sacrificed. Probably the great majority of steelmakers have not yet followed Mr. Taylor in this point, but undoubtedly will do so eventually.

Conclusions.

To sum up: The high speed mix which the steel trade has arrived at by practical trial and experiment is not the mix that the theorist would deduce from theoretical considerations as well as from the practical experiments of others. Instead of high tungsten and comparatively low carbon, the theorist would make it high carbon, and tungsten would be the last metal he would use on account of the double carbide difficulty and waste. There can be no doubt that manganese has been given a trial by the practical experimenters, who, however, have not described their results with it, so that we can only guess at the reason why this metal does not serve. With regard to chromium, however, we are not in the dark in this respect. The objections to it are very explicitly stated. Not forming double carbide at all under 10 per cent. in an 0.80 carbon steel, but acting at once to lower the transformation points, the steel is martensitic or self-hard, and therefore hard to forge, when, on the contrary, the tungsten high speed is double carbide and therefore easy to forge. Then, if we go further and put enough chromium in the steel to make it also and entirely double carbide (18 per cent. in an 0.80 carbon steel) it then is forgeable, probably like the double carbide tungsten steels, but after the double carbide is destroyed by the 1200 degrees C. heat, this high percentage of chromium makes the steel gamma or too soft for a high speed tool, it is claimed. These objections to chromium have been entirely swept away by Mr. Taylor. Gamma steel he finds is not too soft. Still, he tenaciously holds on to tungsten because of his belief that the red-hardness comes not from tungsten alone, nor from chromium alone, but from the two together in steel.

This theory is disproved by Dr. Guillet's work, yet the latter in his turn adheres to tungsten, because of the false idea that gamma steel is too soft. For some purposes, perhaps, tungsten steel is the best, but in general it is not, if Dr. Guillet's tables on page 125 and 126 of Vol. 2, of the *Journal* of the Iron and Steel Institute for 1906 are to be trusted.

The Wellston Steel & Iron Company, Wellston, Ohio, has blown out its No. 1 stack. It will be repaired, and when conditions warrant it will be blown in again.

In 1900 the Tonawanda Iron & Steel Company, North Tonawanda, N. Y., installed a 4000-hp. We-fu-go water softening and purifying system. Since that time it has been necessary to open the boilers only once a year for washing out and inspection. The company has just placed a second order with the Wm. B. Scaife & Sons Company, Pittsburgh, Pa., for an addition to the system, to take care of an increased boiler capacity of 4000 hp., making a total of 8000 hp.

An interesting application of the waste heat from enameling furnaces to the warming of a building is presented in an installation being made by the Massachusetts Fan Company, Watertown, Mass. This consists of two steel plate motor driven fans, so placed in connection with a piping system at the plant of the Carnahan Stamping & Enameling Company, Canton, Ohio, as to draw the waste heat from the furnaces, and thence distribute it by means of another piping system through an adjoining building. The system is similar to that frequently applied in connection with the utilization of waste heat from brick kilns, and the economy secured is comparable thereto.

The Tariff in Congress.

Measures Now Before the New Ways and Means Committee.

WASHINGTON, D. C., December 24, 1907.—The anterecess session of Congress, which has just adjourned until January 6, has been notable for the large number of propositions submitted in the House by both Republican and Democratic members providing for more or less important changes in the Dingley tariff act. These bills have covered a wide range, embracing items in every schedule, and have included many articles of iron and steel and other metal manufactures. All these propositions have been referred to the Committee on Ways and Means, the membership of which was announced by Speaker Cannon on the eve of the adjournment for the holiday recess.

The New Ways and Means Committee.

In the make-up of the Ways and Means Committee Speaker Cannon's conservative legislative policy for the Sixtieth Congress is clearly reflected. The membership of this important committee has been increased from 18 to 19, and now stands 12 Republicans and 7 Democrats. Messrs. Payne of New York, chairman; Dalzell of Pennsylvania, McCall of Massachusetts, Hill of Connecticut, Boutell of Illinois, Watson of Indiana and Needham of California, Republicans, are reappointed to their old places. Messrs. Calderhead of Kansas, Fordney of Michigan, Gaines of West Virginia, Bonynge of Colorado and Longworth of Ohio have been added in place of Messrs. Grosvenor of Ohio, McCleary of Minnesota, Babcock of Wisconsin, Curtis of Kansas and Smith of Michigan. The new Republican members, with the exception of Mr. Longworth, belong to the high protection wing of the party, and Messrs. Fordney and Bonynge were among the most active opponents of the Philippine tariff bill in the last Congress. Of the Republicans who have retired, Babcock and Curtis were both regarded as tariff revisionists, so that the protection sentiment of the Republican side of the committee has been somewhat strengthened by the Speaker.

On the Democratic side Messrs. Clark of Missouri, Cockran of New York, Underwood of Alabama and Granger of Rhode Island have been reappointed, and three new members, Messrs. Griggs of Georgia, Pou of North Carolina and Randell of Texas, have been added. Messrs. Williams of Mississippi and Robertson of Louisiana have been retired. These changes result in advancing Representative Clark of Missouri to the leadership of the Democrats on the committee, succeeding Williams of Mississippi, who voluntarily withdrew. The minority, while strengthened numerically, has not gained in leadership, and it is understood that at least two of the new Democratic members entertain conservative views on the subject of tariff revision. Taken as a whole, it seems to stand for the maintenance of the Dingley act intact throughout the present Congress.

Amendments to the Metal Schedule.

In the past week a number of bills providing changes in the metal schedule have been introduced and referred to the new committee. Representative Byrd of Mississippi, has presented a measure which he states has been framed in the interest of the farmers and planters of the country. It provides for the transfer from the dutiable to the free list of a large number of articles, including the following items of the metal schedule:

1. All kinds of agricultural machines, and parts thereof, such as cotton gins, steam plows, and other high power agricultural machinery, agricultural drills and planters, farm rollers, cultivators, manure spreaders, mowers, reapers, harvesters, hay tedders, potato diggers, fanning mills, thrashing and separating machines, and the like, including those machines dutiable at 20 per centum ad valorem according to paragraph 460 of the present tariff act of July 24, 1897.

2. All kinds of agricultural tools and implements, such as plows, harrows, rakes, horserakes, hoes, spades, shovels, axes, hatchets, forks, and scythes, including those tools and implements dutiable at 20 per centum ad valorem according to paragraph 460 of the present tariff act; hand saws, now dutiable at 30 per centum ad valorem according to paragraph 188 of the same act; pruning knives, now dutiable at 40 per centum ad valorem and upward according to paragraph 153 of the same

act; grindstones, now dutiable at $1.75 per ton according to paragraph 119 of the same act, and crowbars, hammers, sledges, wedges, and the like, now dutiable at 1 5-10 cents per pound according to paragraph 144 of the same act.

3. Horseshoes, muleshoes, and oxshoes, spikes, nuts, and washers, and nails of all kinds, now dutiable at from 6-10 cent to 2¼ cents per pound according to paragraphs 160 to 163 of the same act.

4. All kinds of vehicles peculiarly adapted to farm work, such as farm wagons, ox carts, lumber trucks, horse sleds and sledges, wheelbarrows, and the like, also parts thereof, including axles, wheels, tires, chains, cart and wagon skeins, and the like.

5. All kinds of sugar machinery and tools, implements, and apparatus ordinarily in use on sugar plantations.

6. Vises, anvils, now dutiable at 1⅞ cents according to paragraph 142 of the present tariff act; files, rasps, and the like, now dutiable at from 30 cents to $1 per dozen according to paragraph 156 of the same act; rivets, now dutiable at 2 cents per pound according to paragraph 167 of the same act, and screws, now dutiable at from 4 to 12 cents per pound according to paragraph 169 of the same act.

7. Hoop or band iron, hoop or band steel, cut to lengths, or wholly or partly manufactured into hoops or ties, coated or not coated with paint or other preparation, with or without buckles or fastenings, for baling cotton or any other commodity, now dutiable at 5-10 cent per pound according to paragraph 129 of the same act.

8. Tin plates, terne plates, and taggers' tin, now dutiable at 1 5-10 cents per pound according to paragraph 134 of the same act.

9. Iron or steel wire rods for making rivets, screws, nails, and fencing, now dutiable at 4-10 cent per pound and upward according to paragraph 136 of the same act.

Novel Drawback Proposition.

A proviso added to Mr. Byrd's bill stipulates that where iron and steel and other materials imported into this country are employed in the manufacture of agricultural implements and machinery, tools and utensils, whether exported or used in the United States, a drawback shall be allowed equal to the amount of the duties paid thereon, such drawback to be paid "to the manufacturer or producer or his agent, or to the person to whom such manufacturer, producer or agent shall in writing order such drawback paid," provided that the imported materials entitled to drawback shall be identified and the quantity of the materials and the amount of duties paid thereon duly ascertained under such regulations as the Secretary of the Treasury shall prescribe.

Representative Fulton of Oklahoma has presented a measure providing for the free admission of a large number of articles dutiable under various schedules of the tariff act, including "all farm and agricultural implements and machinery." Mr. Fulton states that his bill has been drawn in response to a demand throughout the Middle West for cheaper agricultural implements, machinery, lumber, leather, printing paper, &c.

Representative Hamilton of Iowa has drawn a bill in the interest of the American shipbuilding industry which proposes that "all steel beams, plates, angle irons, rivets, shaftings, propellers, castings and all other materials, either raw or manufactured, shall hereafter, upon importation into the United States, be free of duty wherever it is shown to the satisfaction of the Secretary of the Treasury that they are imported for the purpose of being used and are actually thereafter used in the construction of sailing or steamships at American ship and navy yards." Mr. Hamilton believes that the passage of his bill would be of greater aid to the domestic shipbuilding industry than Section 12 of the Dingley act, which permits materials for the construction of vessels built in the United States for foreign acount and ownership to be imported in bond without payment of duty, for the reason that nearly all the shipbuilding now being done in the United States is for the coastwise trade, and therefore receives no advantage under the provisions of the Dingley act.

Representative Williams of Mississippi, the minority leader, has presented a bill providing for the granting of American registers to ships purchased abroad, which are to be operated under the American flag either in foreign or coastwise trade. This bill will be urged as a substitute for the shipping bill heretofore presented in the Senate and House by Senator Gallinger of New Hampshire and Representative Humphreys of Wisconsin, and described in this correspondence a week ago.

A Reciprocity Measure.

Another measure, presented by Mr. Williams, is attracting considerable attention. It authorizes the President to declare the ports of the United States free to all products of any nation of the American hemisphere upon which no export duties are imposed whenever and so long as such nation shall admit to its ports free of all national, provincial, municipal and other taxes certain specified products of the United States, including "agricultural implements and machinery, mining and mechanical machinery, structural steel and iron, steel rails, locomotives, railroad cars and supplies, street cars and electrical apparatus." Mr. Williams contends that it is competent for Congress to delegate to the President authority to provide for the free admission of foreign products according to the terms of his bill, and in this connection quotes the decision of the United States Supreme Court in the so-called Blaine reciprocity treaties case.

The temper of the Ways and Means Committee is likely to be tested soon after the holiday recess, as the minority members are preparing to make a formal demand upon the majority for the early consideration of a number of measures already presented and referred to committee. The minority will also insist upon the regular weekly meetings of the committee instead of adjournments from month to month, as was the practice in the last Congress. The majority will resist this movement at every point, but it is obvious that the agitation for revision cannot be prevented and the minority will at least be able to make some capital for the coming Congressional and Presidential campaign. W. L. C.

The Lumber Supply.—In a recent address upon the subject of forestry and its relation to the manufacture of woodworking machinery, O. B. Osborn, connected with the Berlin Machine Works, Beloit, Wis., called attention to the fact that the consumption of lumber in the United States has attained the rate of 400 ft. per capita annually, as compared with a per capita of 60 ft. in Germany. With reference to the estimate submitted by Mr. Pinchot of the Government Forest Service, in a recent Government report that at the rate our forests were now being denuded the supply of lumber making timber would be exhausted within 20 years, it was recalled that similar estimates were made 20 years ago. The speaker had been incorrectly quoted as saying that within that period the Berlin Machine Works and other woodworking machinery plants would find their occupation gone. It was his opinion, on the contrary, that steps now being taken and measures in contemplation by the Government for reforestration will prove effective in preserving and prolonging the lumber supply indefinitely. The adoption of stringent laws similar to those in force in Germany was suggested as desirable to insure this result.

Geo. G. Blackwell, Sons & Co., Ltd., Liverpool, England, announce that they have erected at Garston, a suburb of Liverpool, a new metallurgical works for the manufacture of alloys and metals, and particularly tungsten metal for the steel trade. They have built and fitted up these works with the most up to date and specially designed furnaces and machinery, enabling them to make tungsten metal by their own special process. They have succeeded in producing tungsten metal, although at least three English companies had made unsuccessful ventures in the same line. This metal is placed on the market under the firm's Lion brand, guaranteed to contain 96 to 98 per cent. of tungsten and to be practically free from carbon and other deleterious matter. A regular supply of tungsten ores has been secured.

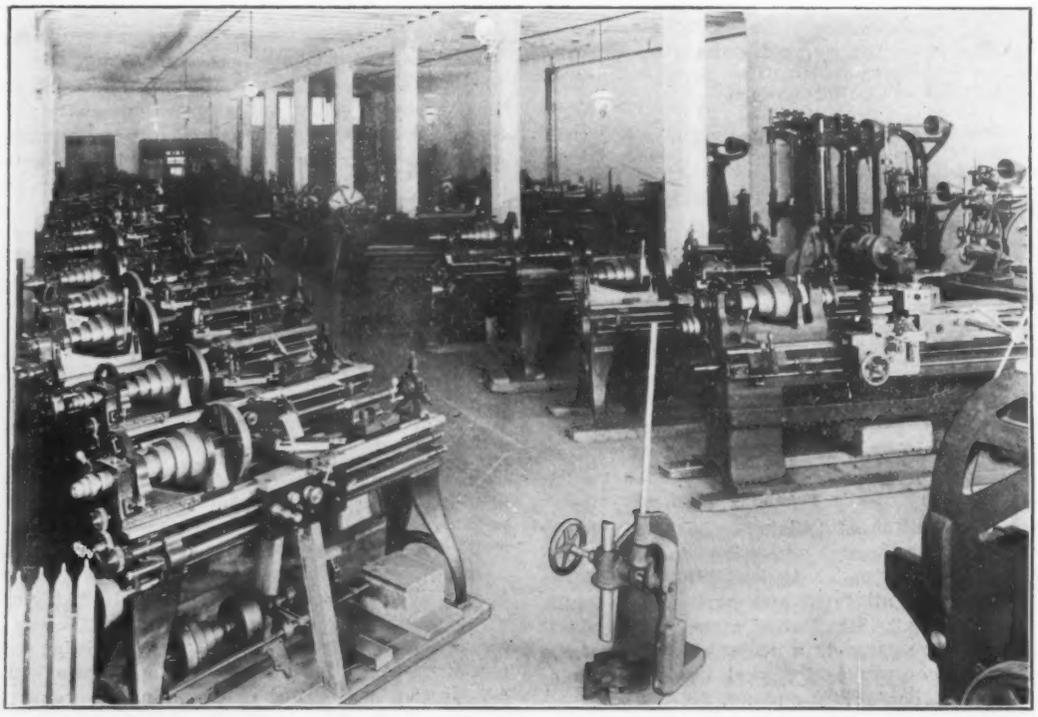
S. W. Ramsey, Girard, Ohio, is engaged in utilizing at a Mahoning Valley blast furnace about 500 tons of flue dust which was allowed to harden in one solid mass. It was most easily and cheaply prepared for use by putting a shot in it and scattering it. The experiments are not yet finished, although so far they have seemed to work well. S. W. Ramsey is inventor of the process of converting flue dust into briquettes, the idea being to use it again in the blast furnace.

A Modern Machinery Store.

The New Building Occupied by McDowell, Stocker & Co., Chicago.

That portion of Canal street, Chicago, between Lake and Madison streets, by reason of the concentration therein of machine tool and machinery interests, has long been known as Machinery Row. But within the past year it has lost much of its distinctiveness in this respect through removals that have practically depopulated the west side of the street to make way for the new Northwestern Railway terminals. Among the concerns who were thus compelled to seek other quarters were McDowell, Stocker & Co., the machinery dealers who for a number of years occupied the premises at 59-61 South Canal street. Meanwhile the business there had grown until their warehouse and storage facilities were inadequate for the economical handling and disposition of stock. They therefore planned and have erected a new three-story and basement structure at 16 Jefferson street, which they now occupy. The front is covered by three large plates, which afford an unobstructed view of the forward part of the room and its contents from the street.

A double system of electric light and gas lamps is provided for illumination throughout the building, and a full view of the machinery floor is afforded from any part of the office. Although the building is of brick and mill construction, due precaution has been taken against fire by the introduction of fire doors for exterior and interior openings. The building is heated from an independent st[illegible]eating plant in the basement.



View of the Main Floor Wareroom in the New Building Occupied by McDowell, Stocker & Co., Chicago.

accompanying illustration shows a view of the first floor, including the shipping office in the extreme rear.

The building is 66 x 151 ft., with 16-ft. stories, and is equipped with an electric elevator 14 ft. square, of four tons capacity, at the rear of the building. It is so arranged that goods may be loaded directly on the elevator from the alley and be delivered to the upper floors or basement. Convenient loading and unloading facilities for the first floor are furnished by a loading bay at the back of the building opening into the alley. The doors opening on this bay are 14 ft. in width and of the folding type, giving ample room for the handling in and out of bulky machines.

Being built especially for the company's use, the floors have been designed and constructed to carry exceptionally heavy loads. The first floor has a capacity of 500 lb. per square foot, and the second and third floors are designed to carry 250 lb. per square foot. The basement, which is used as a combined demonstrating and storage room, has a cement floor and a high ceiling enough above the street level to admit ample light.

The first or main floor, which constitutes the principal display room, has an unusually attractive front. It is not often in buildings of this character that plate glass of such size as is here employed is used. With exception of the single door entrances at either side, the entire

A Large Tin Can Contract.

The American Can Company has secured a renewal of the important contract by which that company will continue to supply the California Fruit Canners' Association with fruit and vegetable cans until December 31, 1912. There was spirited bidding for the contract by prominent competitors of the American Can Company. The old contract, which will expire December 31, 1907, was made in 1902 by F. A. Assman, who was then president of the American Can Company. It was made for a period of five years and called for 50,000,000 to 60,000,000 cans per annum, according to the size of the crops, and involved over $1,000,000 a year. Under the contract in force the California Fruit Canners' Association leases its factory to the American Company, which concern operates it.

H. W. Phelps, who was formerly the selling agent of the American Can Company on the Pacific Coast, but who is now stationed in the East, closed the new contract. It is stated that the terms are not materially different from those under which the old contract was closed.

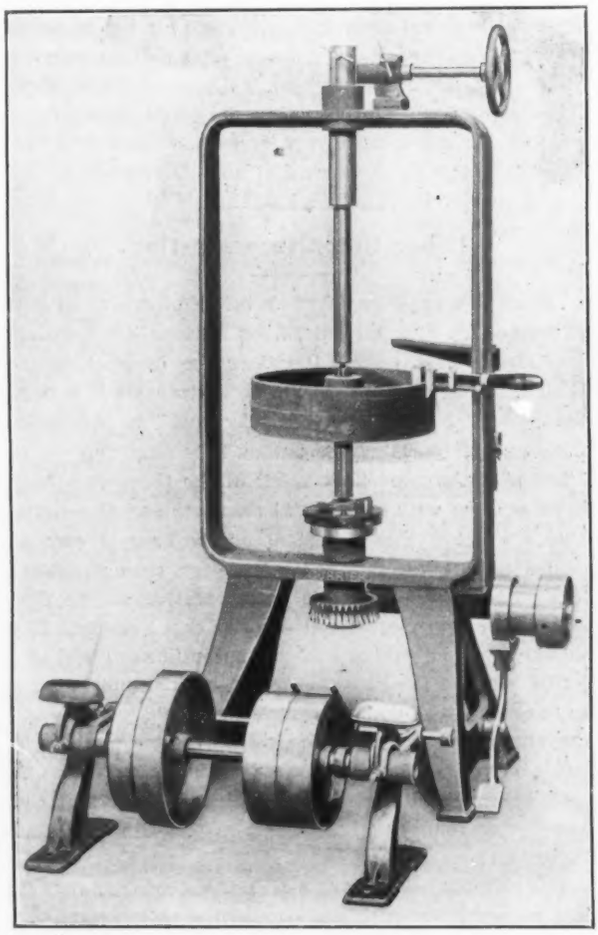
The statement is published that at a conference with the new Michigan Railroad Commission at Lansing, Mich., December 18, at which every interurban electric railroad in the State and nearly all the city lines were represented, the electric managers declared that it costs more to haul freight by electricity than by steam.

It is stated that large economies in the manufacture of products have been effected by the receivers of the Westinghouse Electric & Mfg. Company, while prices of some manufactured products have been advanced about 10 per cent.

The Currier Reaming Machine.

More rapid and accurate work is the usual result of substituting machine for hand labor, but there are some operations which it is generally considered can be done satisfactorily only by manual methods. One of these is reaming. It will come as something of a surprise, perhaps, to learn that there is now manufactured a machine for reaming which is claimed to do from 50 to 200 per cent. more work and with greater accuracy than it is possible to do by hand. Hand reaming, too, is considered to require some degree of skill, but the Currier reaming machine, herewith illustrated and made by J. E. Snyder & Son, Worcester, Mass., can be run by a boy, saving one-half the pay of a man, and this even though the work may be relatively heavy.

The simplicity of the machine, which is strikingly brought out in the engraving, leaves little necessary in



The Currier Reaming Machine Made by J. E. Snyder & Son, Worcester, Mass.

the way of a description of its operation or construction. It is essentially an upright frame with 2½-in. holes bored above and below in exact vertical alignment, and means provided at the base to drive a spindle through worm and worm gear from a driving pulley. The spindle contains a hardened center and an equalizing carrier for driving the reamer by means of a dog. This end of the machinery may be likened to the head end of a lathe, and the upper end of the frame also bears a resemblance to a lathe tailstock. It contains a sleeve which is movable vertically by a rack and pinion from the hand wheel shown. Into the sleeve is fitted a guide bar or mandrel which holds the work to be reamed with a loose fit until the reamer is placed between the head center and the hardened center formed on the lower end of the guide bar.

The work to be reamed is first chucked in the usual manner, and machine reamed to within 0.004 to 0.005 in. of finished size. Then it is placed on the guide bar and held from dropping by the swinging arm attached to the right hand upright, while the reamer is being inserted. A wrench or other suitable device is clamped to the work to keep it from rotating, the machine is started and the swinging arm is thrown to one side, allowing the work to feed downward on the reamer by gravity. If the reamer should stick or it should be desirable for any other reason to stop the work instantly, this can be done by pressing the foot upon the lever brake mounted on the lower right legs.

The machine will take work up to 24 in. in diameter, and uses any of the standard hand reamers. It is desirable, however, to have the shank of the reamer fluted, so that the reamer will clear itself of chips. With the machine are furnished a countershaft, shown on the floor in front of the machine, and one guide bar of any size from 1 to 2½ in. in diameter. The countershaft is intended to run at 400 rev. per min., at which speed the two driving speeds are 615 and 1067 rev., respectively. It is stated that the reamer cannot be crowded when doing heavy work, and that it will do light work equally as well as heavy. One of these machines has been in operation in the company's shop for over nine months, and not a single reamer has been injured in it. In one case a piece of work which it was impossible to do by hand and which had formerly required a boring mill was done on this machine with perfect results.

Anti-Trust Decisions.

A telegram is not a commodity, according to the New York Supreme Court, which on Friday handed down its decision in the contention of Attorney-General Jackson that the agreement reached between the Western Union and the Postal Telegraph companies with reference to rates at common points and the division of receipts from stations in hotels and other centers was an agreement in restraint of trade and a violation of the law against monopolies. Justice Hendricks says:

"Telegraph companies are not included in the Donnelly antitrust act. Whether or not the transmission from one place to another of telegraphic communication is a commodity in any contingency, it is not a commodity within the meaning of the act under consideration. The Donnelly antitrust act, as is shown by its contents and by all the proceedings in the Legislature prior to its passage, had for its object only the prohibition of monopolies in tangible articles of trade and commerce in common use, and such as are capable of manufacture, production and sale."

In the Circuit Court at Dayton, Ohio, on the same day, Attorney-General Ellis took judgment of ouster against the 20 Ohio companies and firms dealing in plumbers' supplies who were found to be in the national combination of such dealers. The companies had demurred to the petition and the demurrer was overruled and judgment given to the State. The court orders them out of the combination and not to observe or obey any of its rules and regulations. The court found that the organization of which these companies were members was in restraint of trade and under the antitrust act the ouster order was given. A number of large Cincinnati manufacturers of specialties that perhaps would not strictly come under the term "plumbers' supplies," but who were members of the organization simply as a matter of courtesy and to please their traveling men, are included in the order, but it is stated that as they were not parties to any trade agreement or other form of trade restriction affecting prices, they are not disturbed by the order of the court.

Figures specially compiled by the New York *Journal of Commerce* show that in January a total of $185,600,000 will be paid in dividends and interest by various corporations, against $180,900,000 in the same period a year ago. The interest payments will be larger than a year ago, due to the heavy output of bonds and notes, while dividends will be smaller because 21 industrial concerns have either passed or reduced their dividends. The fact is that current figures represent past rather than present conditions.

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The Giant Iron Range.

The Mesaba range continues to bear out its Indian designation as the "giant" of Lake Superior iron ranges. It is apparent that not only must it continue to furnish more than 60 per cent. of the total shipments of lake ores, but that as the deep mines of the old ranges actually diminish in output the Mesaba must make up their deficiencies. As the iron ore statistics of each year show how dependent the steel industry of the country is upon the great blanket formation of Minnesota, it is more and more difficult to realize that there should ever have been the state of panic that was produced by the oncoming of this additional supply with its unparalleled cheapness of mining. Just as hard—harder, perhaps—would it have been to realize, when the 10-year contracts for Adams ore were made in the late 90's that before the termination of those contracts Mesaba ores and all Lake Superior ores would have more than doubled in value per ton as they lay in the ground. It has assuredly been a business of surprises.

A 10-year statistical exhibit is given herewith, designed to emphasize the eminence of the Mesaba range. Our table gives total shipments year by year from all Lake Superior mines, with total shipments each year from Mesaba mines, and shows the increase for each year over the year preceding for all ranges and for the Mesaba range separately:

Shipments from all Lake Superior Iron Ranges Compared with Mesaba Range Shipments—Gross Tons.

	Total shipments.	Mesaba shipments.	Increase all ranges.	Increase Mesaba range.
1898.....	14,024,673	4,613,766	1,560,099	337,957
1899.....	18,251,804	6,626,384	4,227,131	2,012,618
1900.....	19,059,393	7,809,535	807,589	1,183,151
1901.....	20,593,507	9,004,890	1,534,114	1,195,355
1902.....	27,562,566	13,342,840	6,969,059	4,337,950
1903.....	24,289,674	12,892,542	3,272,892†	450,298†
1904.....	21,822,839	12,156,008	2,466,835†	736,534†
1905.....	34,353,456	20,153,699	12,530,617	7,997,691
1906.....	38,522,239	23,792,882	4,168,783	3,639,183
1907*.....	42,300,000	27,400,000	3,777,761	3,607,118

* Estimated.
† Decrease.

The sum of the increments for all years, as shown in the third column above, after deducting the decrements of 1903 and 1904, is 29,835,426 tons. The sum of the Mesaba range's increments, after deducting its relatively small decrements of 1903 and 1904, is 23,124,191 tons. In other words, the Mesaba range has furnished 77.5 per cent. of the increased tonnages of the past 10 years. In 1906 and 1907, it will be seen, the Mesaba range has furnished more than nine-tenths of the sum of the increases; in other words, 7,246,301 tons out of 7,946,544 tons. Comparing 1898 and 1907, it will be seen that while all ranges trebled their shipments those from the Mesaba range were sextupled. Taking old range shipments alone, it appears that they were only 60 per cent. more in 1907 than in 1898, while the Mesaba total this year is 600 per cent. of that for 1898.

While only prepared to bring out prominently the remarkable performance of this single range that made its first shipment only 15 years ago, the table tells a number of other interesting things. In but two years out of the 10—and those consecutive years—have declines been recorded. The largest increase, that of 1905 over 1904, came after two years of declines; the next largest increase, that of 1902, came after two years of small increases. Those who have been computing the life of the Lake Superior ore supply by calculating a steady arithmetical progression in shipments, will find that the table does not bear out their theory. The year before us will bring a fresh example of the recessions that interrupt the advances. From having gone well above the 40,000,000 line the total will now doubtless drop well down into the thirties, while a second year or even a third may come before the remarkable record of 1907 is surpassed.

Labor Union Incorporation.

Exception has been taken on behalf of organized labor to the portion of President Eliot's National Civic Federation speech last week advocating the incorporation of labor unions. With some show of indignation it is urged that since "human hearts are involved" in the aspirations and strivings of the unions it is only another exhibition of the mercenary spirit of the times to attempt to class them with commercial associations. One hardly knows whether this statement of the case is even intended to be taken seriously. However, since the American Federation of Labor's representative at the Civic Federation dinner expressed surprise that President Eliot should be found taking such an unsentimental and even sordid view of the high mission of the labor union, it may be in order simply to be surprised at the reasons given for the union's segregation from things commercial. Charitable organizations, hospitals and colleges, it may be said, have never found it necessary to protest that they were being commercialized by laws providing for their incorporation.

We shall probably not go astray if we consider that the real reason labor unions are unwilling to incorporate is that they will not put their funds in jeopardy from suits for damages. This has been frankly avowed by some labor leaders, who have been pressed to tell why organized labor should not acquire a court standing. Moreover, the position thus taken is entirely in line with that assumed by union labor leaders regarding legislation of whatever kind bearing upon the conduct of such organizations. The Taff Vale decision in Great Britain has made trades unions everywhere active agitators for special exemptions from criminal or civil actions of any description. There must be no application of the conspiracy laws to anything done by a labor union in furtherance of its position in a trade dispute. There must be no use of the machinery of the courts to prevent an act of violence or of destruction of property contemplated by a member or members of a labor union, to aid in bringing an employer to the union's terms. There must be no recourse at law against a union as a unit or against its officers or members, for breaking a contract into which they may have entered with an employing firm, though all the property of the other party to the contract may be

made liable should it fail to carry out its side of the agreement.

The whole contention of the labor union respecting the application of the laws is that it must be treated as a thing apart from all other institutions. The purpose seems to be to create an *imperium in imperio*—a power amenable to no higher authority, permitted to work out its will without let or hindrance. The logical outcome of this contention which is urged upon Congress and Legislatures incessantly is that every demand of organized labor upon an employer is just and must prevail, and that any and all means may be resorted to to compel the employer's compliance. What the union asks of courts, police power, military—every form of constituted authority, local, State or national—is that they keep hands off, while the union works its will upon the uncompliant employer. Here is the crux of the whole question of labor union incorporation. It involves a position that can never be tolerated and that least of all should be urged by those whose constant complaint against conditions in the United States is the extent to which these are based on special grants and privileges.

Freight Overcharges.

Some of the leading shippers are endeavoring to maintain a firm stand in refusing to pay more than the lawful rates, requiring expense bills to be corrected before payment. Simple as this may seem from an academic point of view, it is an innovation in the relations between shippers and the railroads. The general custom which has long prevailed is to require the consignee to pay the uttermost farthing of the charges demanded by the delivering agent, whether right or wrong. If there has been an overcharge, the consignee is permitted to carry on tedious correspondence with the claim department, extending over weeks, months or even years, in the effort to recover his money. There is no doubt that this custom, which the railroads have considered necessary to safeguard their business, has been responsible for a great deal of the universal feeling against railroad corporations, which has found vent in the legislation of recent years.

The shippers who advocate the new policy of refusing to pay more than what they know to be the lawful rates claim in support of their position that the railroad has no right to collect more than the legal charges, and they have been successful to a considerable extent in obtaining recognition from progressive railroads for this policy. If it is found upon investigation that the shipper is mistaken, the Hepburn law gives the railroad ample remedies to enforce payment. It is no longer necessary for the railroad to hold the property for the advantage of maintaining a lien for freight charges, as the Interstate Commerce Commission has ruled that the shipper is violating the law if he withholds the amount properly due.

The system followed by the railroads in billing freight charges is so devised that a mistake in favor of the shipper is a very rare occurrence; so rare, in fact, that it is surprising how large a proportion of expense bills are overcharged. The billing clerks take no chances in failing to charge enough on the waybills, and the auditors who check their work usually have time, before the shipment reaches its destination, to find any undercharge and have it corrected. None of these employees, however, is in danger of being reprimanded for overcharges, and the inevitable result is a large amount of trouble for the consignee who is careful in checking his bills.

Practically all industries, or shippers handling any considerable volume of business, have credit accounts with the railroads which deliver their freight, some paying weekly, others biweekly and many large concerns paying monthly. This advantage of a credit account is not extended by the railroad as a favor or privilege, but is a necessary feature of the business, especially where shippers have private sidings. To hold each car until the expense bill could be presented and paid would delay and congest the traffic to an extent that would cripple the service. Where the shipper has a credit account there is ample time to report overcharges to the railroad and get the expense bill corrected before settlement day, and this is the plan followed by the shippers who advocate the new policy. An experienced rate clerk only needs a few moments to discover the mistake when an expense bill is overcharged, but if the bill has been paid the shipper must wait a long time, excepting on a few progressive railroads, for the overcharge to be refunded.

There is a growing feeling among shippers that some means must be found to check the tendency of the railroads to overcharge their expense bills. In several important branches of the iron and steel industries it is the custom to sell the product delivered, which usually necessitates the prepayment of the freight. Railroad agents, however, do not recognize "prepaid" bills of lading in making deliveries. If there is a waybill with the car showing charges to be paid they must be paid, regardless of the bill of lading, before the car is delivered. On a very large percentage of cars on which the shipper has actually paid the full legal rate to destination, the consignee has another bill to pay before getting possession of the goods. This is so common a practice that the consignee seldom refuses the goods or makes inquiries by telegraph. He pays whatever is demanded, and deducts the expense bill from his remittance, sending the bill to the shipper and leaving to him the work of getting the unjust charge refunded. It would save a vast amount of trouble to iron and steel mills if the railroads could be induced to recognize their prepaid bills of lading. Mistakes in routing, in rebilling at junction points, or in the application of rates on through shipments are so common that constant vigilance on the part of the shipper is necessary to guard against them.

A great deal has been said about the congestion of freight terminals, but the congestion in claim departments has not received the attention it deserves. The railroad has every inducement to prevent or clear up terminal congestion because it restricts earnings, but the opposite conditions prevail in the claim department. Many large railroads receive 500 to 1000 claims a day on freight traffic, and when these have accumulated for months or years it is not surprising that the shipper receives many polite acknowledgments of his inquiries before he actually obtains settlement. If shippers who are careful in checking their rates could establish the practice of refusing to pay overcharges, it might relieve the claim departments of a part of their congestion of business, and make it possible for them to give more prompt attention to loss and damage claims.

A Questionable Interference.

Some explanation should be forthcoming of the circumstances under which members of the United States Geological Survey intervened in the rescue work at the Darr mine. Newspaper dispatches report that two of the staff of the Survey took charge against the protests of the management of the coal company. There is no indication in the reports of the attitude assumed by the State Mine Inspectors of Pennsylvania, although earlier

dispatches indicated that the chief mine inspector called the district inspectors together to meet at Pittsburgh. These are men of long experience and who are in daily contact with coal mining in the State. They appear to have been brushed aside by federal employees who certainly cannot claim to be familiar with local conditions, however great their faith may be in the invention of the man whose cause they espoused. While it looks as though the invention in question was successfully applied in penetrating deeper into the mine, that does not justify what appears to be, on its face, an utterly unwarranted assumption of power on the part of men connected with a federal scientific bureau.

The Discard from Rail Ingots.

Dr. Charles B. Dudley, Altoona, Pa., chemist of the Pennsylvania Railroad, sends the following interesting communication to the *Railroad Gazette* on the question of the crop that should be required in the case of rail mill ingots:

It is fair to say that the more the question of discard is studied the more difficult it becomes to have a positive and definite view in regard to it. It would hardly be wise at this time to go into the whole question of discard. There is too much lack of positive information as to how the majority of rails fail to tie up these failures satisfactorily with the discard. This lack of positive information on the part of the railroads was, as we understand it, the principal cause of the inability of the committee of the American Railway Association to make a more satisfactory report at the recent meeting of that body. It is hoped and believed that by means of a careful study within the next year or two of rails which fail in track a good deal more definite information will be obtained. At the present time we hardly feel willing to say more than that probably the poorest steel for rails in the ingot is somewhere from 15 to 18 per cent. down from the top. Also that there are two points involved in this poor steel—namely, segregation and physical defects in the metal. Under the head of physical defects are embraced all that is commonly known as the "pipe," and bubbles or cavities or sponginess which does not weld up under the rolling. We have fairly positive evidence that a rail having internal physical defects is almost always a segregated rail. We do not have as definite information that a segregated rail free from internal physical defects will fail in service. The great need to-day in rail manufacture is some test by which internal physical defects in the rail can be detected. Many rails fail in the middle of the length of the rail, and an examination of these failures shows almost without exception that there was an unwelded up portion in the rail, which, under the pounding of the traffic, gave way. If now we had some means of telling whether there was an unwelded portion in any part of a rail the whole question of discard could, we think, be ignored. It is believed with good reason that the drop test, as at present conducted, is not sufficient for this purpose, although this point needs further study.

Our ideas at the present time are: (1) that a test should be made from every blow; (2) that the inspector should be entitled to select a crop end, or a portion of a rail which shall be used for the test; (3) that he should choose for test steel that came from 15 to 18 per cent. down from the top of the ingot. At present it will be necessary, of course, to use the drop test or some modification of it. (4) In case the sample fails the whole heat should be rejected, or at least the top rail from each ingot in that heat; and, (5) and, perhaps most important of all, no retests should be made. If this scheme could be carried out, we think the whole pestiferous question of discard could wisely be left in the hands of the manufacturers.

It may not be amiss to add that this proposed method of testing commercial steel products, without any reference whatever in the specifications to discard, has worked charmingly for a number of years now. Driving axles, car axles, crank pins, billet steel, &c., are and have been for years tested and accepted, or rejected in accordance with the methods outlined above, with no reference whatever in the specifications to discard.

In the matter of rails it is a fair question, I think, whether in the past the railroads have not made a mistake in that they have specified too much. It is, of course, difficult to draw the line and say positively how much should be specified and how much left to the manufacturer, but I think it hard to refute the statement that the assumption by the consumer of the right to specify a discard has resulted in relieving the manufacturer of a responsibility which he should bear. It is the function of the manufacturer to make rails and offer them for acceptance. It is the function of the consumer to apply such tests and inspection as will prevent the acceptance of inferior or hazardous material, and properly safeguard the interests for which he is responsible. If a portion of the energy that has been spent in contending over discard had been spent in devising proper tests and methods of making these tests efficient in excluding rails that are piped or otherwise inferior, I am confident that so many poor rails would not now be in track, and that, as already stated, the question of discard could safely be left entirely to the manufacturers.

National Founders' Association Committeemen.

Since the annual convention of the National Founders' Association, held in New York in November, the organization of the various District Committees for the coming year has been completed. The list is as follows:

First District.—A. W. Whitcomb, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., chairman; A. N. Abbe, P. & F. Corbin Company, New Britain, Conn., vice-chairman.

Second District.—T. L. Richmond, Buffalo Scale Company, Buffalo, chairman; F. E. Wheeler, International Heater Company, Utica, N. Y., vice-chairman.

Third District.—Thomas E. Durban, Erie City Iron Works, Erie, Pa., chairman; J. H. Schwacke, William Sellers & Co., Inc., Philadelphia, vice-chairman.

Fourth District.—Irving H. Reynolds, William Tod Company, Youngstown, Ohio, chairman; Walter S. Russel, Russel Wheel & Foundry Company, Detroit, Mich., vice-chairman.

Fifth District.—W. H. Winslow, Winslow Brothers Company, Chicago, chairman; J. W. Gardner, Gardner Governor Company, Quincy, Ill., vice-chairman.

Sixth District.—George C. Forgeot, Allis-Chalmers Company, Milwaukee, chairman; A. J. Brawley, South Park Foundry & Machine Company, St. Paul, Minn., vice-chairman.

Seventh District.—H. Cockshutt, Cockshutt Plow Company, Brantford, Ont., chairman; Edgar McDougall, John McDougall Caledonian Iron Works Company, Montreal, Que., vice-chairman.

Eighth District.—E. A. Watson, Caldwell-Watson Foundry & Machine Company, Birmingham, Ala., chairman; Exile Burkitt, Southern Engine & Boiler Works, Jackson, Tenn., vice-chairman.

The Duty on Steel Circular Saw Plates.—It has been decided by the Board of United States General Appraisers that so-called steel circular saw plates are subject to duty not only under the provision for "saw plates," but also at the rate of ½ cent per pound, the rate of duty prescribed for this class of merchandise. The protestants in the case, Hermann Boker & Co., New York, set up the contention that the additional duty did not accrue on the merchandise. This claim, however, the board denies and affirms the action of the collector in levying the higher duty.

The annual convention of the salesmen and department heads of the Berger Mfg. Company, Canton, Ohio, will be held at the home office, December 31, January 1 and 2, when much profitable discussion is anticipated. The programme will be varied and interesting. The annual repairs and inventory will be completed between December 16 and 28, and a complete resumption will occur December 30.

The United States Coast and Geodetic Survey has for some years been engaged in charting the waters surrounding the Philippine Islands. It has so far found 2600 islands in the Philippine archipelago, whereas the Spaniards had but 1200 islands thus indicated at the time of the American occupation.

Westinghouse Electric Affairs.

The Receivers' Financial Report.

The receivers for the Westinghouse Electric & Mfg. Company have issued an exhaustive report prepared by Haskins & Sells, certified public accountants, giving a balance sheet of October 23, 1907, and the income account for seven years and seven months ended October 31 last. A condensed statement of income showing the balance available for the payment of interest and dividends for that period is summarized as follows:

	Total.	Average per annum.
Sales	$181,723,643	$23,963,557
Cost of sales	154,411,675	20,361,979
Net earnings	$27,311,967	$3,601,578
Other income	5,328,929	702,716
Total income	$32,640,898	$4,304,294
Less inventory adjustments, &c.	3,951,961	521,138
Net applicable to interest and dividends	$28,688,936	$3,783,156

The growth of the business since 1904 is shown below for years ending March 31:

	1905.	1906.
Sales	$20,230,066	$24,081,600
Cost of sales	18,107,906	21,390,058
Net earnings	$2,122,160	$2,691,542
Other income	910,828	959,786
Total income	$3,032,988	$3,651,328
Less inventory adjustments, &c.	410,466	488,420
Net applicable to interest and dividends	$2,622,522	$3,162,908

	1907.	Seven months ended October 31, 1907.
Sales	$33,026,240	$22,265,322
Cost of sales	28,846,665	19,334,540
Net earnings	$4,179,575	$2,930,782
Other income	1,256,335	869,833
Total income	$5,435,910	$3,800,615
Less inventory adjustments, &c.	669,879	717,393
Net applicable to interest and dividends	$4,766,031	$3,083,222

The following is a summary of the balance sheet of October 23, 1907:

Assets.		
Property and plant		$21,548,403
Investments—		
Capital stocks of subsidiary manufacturing companies in United States	$4,824,726	
Foreign companies	7,595,188	
Westinghouse Electric Company, Ltd. (London), capital stock	1,651,834	
Societe Electrique Westinghouse de Russie	2,723,021	
Societe Anonyme Westinghouse (Havre)	2,646,573	
Westinghouse Electricitats Actiengesellschaft	121,250	
Canadian Westinghouse	1,710,000	
Total	$16,447,866	
Miscellaneous investments	8,831,860	
Total investments		$30,104,453
Working assets		17,942,065
Quick assets		10,317,613
Other accounts and notes receivable		5,274,092
Contingent assets		2,296,256
Total assets		$87,482,882
Liabilities.		
Preferred stock	$3,998,700	
Assenting stock	23,938,800	
Nonassenting stock	600	
Total capital stock		$27,938,100
Funded debt		21,319,000
Six per cent. collateral notes, secured by Lackawanna & Wyoming Valley Rapid Transit Company		6,000,000
Five per cent. collateral notes, French loan		2,702,703
Current liabilities		13,961,352
Subscriptions		1,559,514
Reserve for possible shortages in inventories		211,956
Contingent liabilities		2,296,256
Profit and loss, surplus		11,494,002
Total liabilities		$87,482,883

The increase in the surplus account of the company and its subsidiary manufacturing companies in the United States during the seven years and seven months ended October 31, 1907, has amounted to $10,246,104.34, as follows:

Net income available for interest and dividends shown	$28,688,936.49
Other profit and loss credits	7,648,247.12
Total credits	$36,337,183.61
Charges made against surplus account	26,091,079.27
Balance	$10,246,104.34

It is stated in the report that the patent agreement between the company and the General Electric Company provides that each of the two companies shall be licensed under the patents of the other, and provision is made for sharing the expense of maintaining the patents of the two companies and for the adjustment of royalties between the two companies based on their respective uses of the patents subject to the agreement.

The report explains that the real estate and buildings are figured at cost, as also are $5,304,499 worth of machinery, tools and fixtures. "The investment in capital stocks of subsidiary manufacturing companies, which on March 31, 1907, was carried on the books of the company at $4,824,726, represents the entire ownership of the Bryant Electric Company, the Perkins Electric Switch Mfg. Company, the R. D. Nuttall Company and the Westinghouse Lamp Company. The net income of these companies, applicable to dividends on the stock which the Westinghouse Company held, amounted to $664,133 for the year ended March 31, 1906, and to $844,324 for the year ended March 31, 1907, or to 14 per cent. and 18 per cent. respectively upon the book value."

Working assets are given at some length. Raw material and supplies on hand, October 23, were shown by the records to have cost $4,298,143. The accountants go on to say of $5,021,847 for finished parts and completed apparatus: "It is believed that, considering the Westinghouse Company as a going concern, the asset 'finished parts and completed apparatus' is conservatively valued." Work in progress at factories, valued at $6,221,129, is explained thus: "Because of the steady and continuous advance in the prices of the raw materials and supplies which the company purchased during the period from the date of the inventory taken under our supervision, April 1, 1906, to within the past month or two, and the chance of materials having gone into this account at a price higher than that at which they were credited out on the completion of work, there is a possibility for a discrepancy to have arisen in this account. . . . It is our opinion, considering the company as a going concern, that if this reserve be increased to $497,690, which is 8 per cent. of the book value of the account, this item will be conservatively valued and properly stated.

Surplus account is credited with $7,648,247, and includes: Premiums on capital stock sold during seven years and seven months to October 31 last, $5,384,158; profit on stocks and bonds sold during this period, $1,465,896. "The charges made by the company against its surplus account for items of an extraordinary nature, which were not applicable to the income, prior to determining the amount available for interest and dividends, and which are not included in the income statement," are given at $26,091,079, and include $6,682,414 interest and $14,384,632 dividends on stock.

The Arrangements for Reorganization.

The creditors and stockholders of the Westinghouse Electric & Mfg. Company, who have been working out the details of the plan for raising new capital and restoring the company to its stockholders, after a long conference in New York December 20, announced the organization of a committee of creditors, of which James N. Jarvie, representing the National Bank of Commerce of New York and other financial institutions, was made chairman. This statement was issued by Mr. Jarvie:

At a conference between the receivers and a number of important creditors of the Westinghouse Electric & Mfg. Company the following gentlemen were appointed a committee to act for the creditors of all classes in formulating and executing a plan

for the readjustment of the company's debt and the prompt termination of the receivership:

Richard Delafield, president of the National Park Bank; James N. Jarvie, representing the National Bank of Commerce and other financial institutions; Albert H. Wiggin, vice-president Chase National Bank; F. H. Skelding, president of the First National Bank of Pittsburgh; Charles A. Moore of Manning, Maxwell & Moore; Neal Rantoul of F. S. Moseley & Co. of Boston. A seventh member residing in Chicago is to be added.

The committee organized by electing Mr. Jarvie chairman and is now at work upon a plan of readjustment which has been under informal discussion for several days.

The committee is acting in harmony with Kuhn, Loeb & Co., who represent the interests of the holders of convertible bonds and the 6 per cent. collateral notes. The committee is also acting in full accord with Mr. Westinghouse, who is giving the committee his earnest co-operation.

Friends of Mr. Westinghouse state that while the new interests which will take their places in the board will relieve him of much responsibility, there is no ground for the report that his power under the reorganization will be kept within narrow limits. It has always been his desire, it was said, to have strong banking interests represented in the board. The item of $400,000 paid to President Westinghouse, appearing in the report of the public accountants to the receivers under the head of charges against surplus account of an extraordinary nature, was paid to President Westinghouse in stock, which he took at 150 per cent.

Mr. Westinghouse had made it a practice for years, it was explained, to make payments out of his own pocket to engineers and other officers and employees of the company in the nature of bonuses for special achievements. When these facts became known to the committee it was decided to reimburse him, and he expressed his desire to receive payment in stock. The item is explained in the report as the "amount paid George Westinghouse to reimburse him for payments made in the interests of the company to various officers, engineers and other employees of the electric company in addition to their regular salaries paid by the company in the last 10 or 12 years."

Iron Mining Curtailment.

DULUTH, MINN., December 21, 1907.—General curtailment is spreading in the mining regions. The Oliver Iron Mining Company has laid off 25 per cent. of its men around the mines of the Marquette range and about the same proportion at Iron Mountain and other Menominee centers. It has stopped all steam shovel work, except in some jobs of stripping, on the Mesaba, but this is a usual custom after the close of navigation. Its Gogebic mines are running light handed. In the Crystal Falls section more mines have shut down entirely, including the rest of the Corrigan properties. Bristol mine of Oglebay, Norton & Co., and the Pickands, Mather & Co.'s properties, are to run with 75 per cent. of their former force after the new year. Other companies throughout the lake region will follow this example, or become even more drastic in their reductions.

With all this restriction, there has been and will be no general cut in wages. It is true that some of the mining companies have reduced their scale of wages, but the Oliver Iron Mining Company will probably hold its scale at the same point as during the past season. If the company does this it will be one of the most diplomatic courses it has ever taken, and its general attitude since its formation has been almost without flaw. A strict maintenance of the wage scale will not only have the effect in warding off future troubles with the Western Federation of Labor and avert other troubles of the same sort, but it will not cost the company anything, for the efficiency of the men will be increased fully as much as would be gained by a reduction of pay.

Ore is not selling, and no interest in the future of its price seems manifested by furnacemen. No inquiries are made excepting for some of the high grade ores and scarce Bessemers.

The Maas mine, of the Cleveland Cliffs Company, at Negaunee, is installing an electric haulage plant, and it will be in operation soon after the first of the year.

D. E. W.

The Northwestern Iron Company Sold.

The entire interest of Capt. Irving M. Bean of Milwaukee, Wis., in the mines and plant of the Northwestern Iron Company, of which he has been president and treasurer for many years, has been sold to Ferdinand Schlesinger, also of Milwaukee, who is at the head of the Newport iron mining interests on the Gogebic range and president of the Milwaukee Coke & Gas Company. Captain Bean will retire from the management of the Northwestern Company about January 1, after having been actively identified with it for more than 40 years. The consideration is not stated, but the transaction is unquestionably one of the largest, as well as one of the most important, mining and furnace deals closed in Wisconsin since the notable sale of the Norrie mines on the Gogebic range 10 years ago, which involved $3,000,000.

The mines and plant of the Northwestern Iron Company are located at Mayville, Wis. Their purchase by Mr. Schlesinger means much for the Milwaukee Coke & Gas Company and the company operating the Newport Bessemer ore mine, as their control will give the Schlesinger interests a large output of both Bessemer and non-Bessemer iron ore. It will also give the new owners a large annual output of pig iron, as the capacity of the Mayville plant is between 500 and 600 tons of pig iron a day, and it will undoubtedly be increased next year. The Newport mine will produce 600,000 tons of good Bessemer ore this year, and improvements are now being made to insure an annual output of 1,500,000 tons there within the next three years. Those familiar with the new deal state that, with the Mayville plant and the Newport mines, the Milwaukee Coke & Gas Company will in the future produce and control its own ore, pig iron, coke and lime. The company will also operate its own coal mines, a large deposit going with the sale of the Mayville plant. It will consequently be enabled to go into the market in the future on practically its own producing basis for everything from the mine to the cupola.

The Northwestern Iron Company's mines and furnaces at Mayville have been owned by the Bean family for more than 50 years, forming one of the oldest producing properties in the State. The late Jacob L. Bean opened the mines in 1848 and continued to operate them, with his son, until his death. Since that time the property has been greatly improved under the management of Captain Bean, and has never been compelled to close down either on account of hard times or strikes. During the past five years large sums have been expended in improvements and in extending the capacity of the plant. Captain Bean will continue to maintain an office in Milwaukee. Mr. Schlesinger will be president of the Northwestern Iron Company and one of his associates will be named as treasurer.

The blast furnace of the Sheffield Coal & Iron Company, Sheffield, Ala., was blown out December 13, and at the same time the company went into the hands of a receiver. It is understood that the action is a friendly one for the purpose of reorganizing the company and securing additional capital. Prominent iron and steel men are interested in the company, including four directors of the United States Steel Corporation. William Edenborn, a director of the latter company, is president.

The Petroleum Iron Works Company, formerly of Washington, Pa., has completed the building of its new plant at South Sharon, Pa., which will be devoted to the building of blast furnaces, tanks, stacks, riveted steel pipe, &c. The new plant is much larger than the one at Washington, containing the very latest modern equipment, and will allow the company to manufacture to much better advantage and with much larger capacity.

The Standard Steel Car Company, Pittsburgh, Pa., has increased its capital stock from $3,000,000 to $4,000,000, the increase representing the company's interest in the new plant at Hammond, Ind., completed early in the year and now merged with the parent company.

Merchant Marine League Convention.

The Merchant Marine League of the United States held a convention in Cleveland, Ohio, on Saturday, December 21, to call the attention of the country anew to the drain upon its resources by the employment of foreign ships to carry its freight and mails, and to urge the passage by Congress of a ship subsidy bill. Harvey D. Goulder of Cleveland, president of the league, called the convention to order and presented ex-Governor Myron T. Herrick, of Ohio, as chairman. Truman H. Newberry, Assistant Secretary of the Navy, reviewed the history of the American Navy and the American merchant marine. He pointed out that Admiral Dewey, in a report prepared in 1905, at the request of Senator Gallinger, chairman of the Merchant Marine Commission, stated that on the basis of a strength of 27 battleships the United States Navy would require from the merchant marine in a serious war approximately 100 vessels, in addition to a large number of tugs. The vessels, especially of the larger size, did not exist in sufficient numbers in the American merchant marine. In the present cruise of the United States battleship fleet all the coal required, except a small portion conveyed by regular navy colliers, had to be intrusted to foreign "tramp" steamers, because there were not enough American steamships available. An important foreign war would find the United States with the second navy in the world very gravely handicapped by the lack of an oceangoing merchant fleet of ships and by the lack of a trained reserve of officers and men. England had at least 100 merchant colliers, aggregating 400,000 tons immediately available in the event of war, while the other foreign powers were well provided with vessels of the same class.

William S. Green of Massachusetts, chairman of the Merchant Marine Committee in the House of Representatives, said in part:

> There is a great sentiment against ship subsidy in the Central Western States, because the people of that district do not understand the question. This must be a campaign of education. It is said by many newspapers that this is a great "graft." That is not so. It is an important business matter, of utmost importance to the people of the United States. What I want is results, and I do not care where they come from. We will never obtain a merchant marine until the people drive Congress to action. Some of our representatives in Congress are afraid. There is talk that this will help some of our rich men and trusts. Whatever the result, we must have American ships. We are asked why private capital does not build a merchant marine. The answer is that it is unprofitable, and that is why we need government assistance. The building of a great merchant marine would mean almost unlimited labor, yet labor organizations are opposed to the proposition. I do not understand it.

Assistant Postmaster-General J. T. McCleary spoke to the question, "Why the Post Office Department Is Interested in Our Merchant Marine." He said:

> The Government received last year for carrying the mails to foreign countries over $6,500,000, of which more than $3,500,000 was profit. If the Government is willing to forego this profit and to have the mails carried by its own citizens instead of by foreigners, this $6,500,000 of postal receipts will provide at a minimum cost the naval reserve which the nation is bound to provide at any cost, and will at the same time secure for this country lines of ships which will develop valuable streams of commerce with South America and other parts of the world, the benefits of which will be felt by all our people.

Senators Foraker and Gallinger advocated ship subsidy. The latter said that more American vessels would not only be profitable in a commercial sense, but will be messengers of peace and amity wherever they go. "There has been a shrinkage of our shipping in the foreign trade from 2,496,894 tons in 1861 to considerably less than 1,000,000 tons at the present time. Last year our foreign commerce exceeded $3,000,000,000 in value. To duplicate in American shipyards that foreign tonnage so employed would give steady employment for 10 years to 100,000 skilled American workmen in our shipyards alone."

Other addresses were made by H. Coulby, Cleveland, president of the Bessemer Steamship Company; Lewis Nixon, New York; W. E. Humphrey, Seattle, Wash., and by Welding Ring and W. B. Craigin of the New York Produce Exchange. The last named gentleman advocated free ships, a sentiment which called forth dissent from others present, who said that this would not solve the problem.

J. G. Butler, Jr., Youngstown, Ohio, made a forceful presentation of the advantages that would come to the manufacturers and industrial employees of the United States from the building of ships to enter the foreign trade. He emphasized the fact that only about one-half the work represented in a vessel is done in the shipyard, the other half being done in steel works, boiler works and in all the various industries supplying the complex equipment of a modern ship.

A banquet Saturday evening to Senators Foraker and Gallinger was attended by 200 persons. The Merchant Marine League re-elected its officers as follows, all of Cleveland: President, Harvey D. Goulder; secretary, John A. Penton; treasurer, J. J. Sullivan.

Trademark Protection Abroad.

The Department of Commerce and Labor has just issued to manufacturers and others, at the request of the State Department, a circular showing that the importance of protecting trademarks in foreign countries is not generally appreciated. The circular is as follows:

The importance of protecting trademarks in foreign countries is not fully appreciated by many American commercial houses that are engaged in foreign trade. Registration in this country furnishes no protection whatever beyond the jurisdiction of the United States. The laws of the respective countries governing trademarks must be fully complied with by owners of such marks, and failure to do so enables any person to secure the exclusive right to the use of the mark in the country in which registered. Registration of the trademark abroad should precede consignment of merchandise which the mark is to protect.

This matter has been frequently called to the attention of interested parties in consular and other official reports. In view of many applications received from business men for redress on acount of dishonest appropriation of their trademarks in foreign countries, special attention is again invited to this matter, and interested parties are admonished to secure registration of their marks in all countries to which it is proposed to ship American products. The following is issued upon request from the Department of State, having special reference to trade with the Orient:

"All American manufacturers, publishers and others interested in the protection of American trademarks, copyrights, patents, designs, &c., against infringement in China, Korea or Japan by Japanese or Koreans, should take due notice of the fact that if they wish to protect their rights they should immediately secure registration at the Tokio Patent Office, which makes priority of registration the condition of protection. This is especially important at this time.

"The following is a citation from W. Silver Hall's 'Manual on the Japanese Patent, Trademarks and Designs Law" (2 ed.):

> "In several test cases, one of which was carried to the Supreme Court, in which the plaintiff B applied for the cancellation of a trademark registered by the defendant A, on the ground that he, B, had used it for many years to distinguish goods of the same class which he had been in the habit of importing, and which were extensively known and used in Japan, it has been decided that no such protection against infringement of a trademark of this class can be granted, nor can it be recognized in any way, unless it has been actually registered in the Japanese Patent Bureau, and in fact, the continued use of such a mark by B renders him liable to prosecution for infringing A's registered trademark.

"As there are many such trademarks which were known and used in Japan by foreigners before they were entitled to claim registration, these decisions are of considerable importance and emphasize the necessity of registering a foreign trademark before it becomes known and valuable in Japan."

The firm of Parker & Lee, heretofore engaged in the work of publicity at 20 Broad street, New York, will be dissolved December 31 by the retirement of Ivy L. Lee. The business will be continued at the same address, George F. Parker for this purpose having associated with himself Charles A. Bridge, hitherto manager, under the firm name and title of Parker & Bridge.

PERSONAL

Capt. Godfrey L. Carden of the United States Revenue Cutter Service has been temporarily detached from his naval connection and under the direction of the Treasury Department has been assigned to special work in Germany. This appointment is the first indication of a movement to appoint a commercial attache in connection with our diplomatic representation in foreign countries, as has been suggested by Secretary Straus of the Department of Commerce and Labor. Captain Carden is thoroughly conversant with the machinery trade in Germany, as he was sent to that country in behalf of the St. Louis Exposition to secure exhibits of German machinery. Last year he accompanied a large party of American manufacturers of machinery on a tour through Germany, visiting many manufacturing establishments. In view of his wide acquaintance in this particular field he has been selected by the Treasury Department in the expectation that representation of this kind in Germany will materially assist the development of German trade with American manufacturers of machinery.

The Pennsylvania Railroad Company announces that it will continue the policy inaugurated some time ago of furnishing to the public prompt and accurate information of interest relative to its affairs, and that Ivy L. Lee, who retires from the firm of Parker & Lee (who have hitherto acted for the company in this capacity) will on January 1, 1908, enter the service of the company and have particular charge of this work.

August Marx, who for several years has been superintendent of the Philadelphia Roll & Machine Company, Philadelphia, Pa., has been appointed general manager.

H. C. Williamson, who has been representing the Fairbanks Company throughout Connecticut, making his headquarters in New York, has resigned that position to take up other work.

A. L. Lovejoy has resigned as treasurer of the Becker-Brainard Milling Company, Hyde Park, Mass., to take effect December 31. He will announce his plans for the future a little later on.

On Wednesday, December 18, a luncheon was tendered to Arthur Williams, general inspector of the New York Edison Company, at the Engineers' Club, New York, by his colleagues on the Board of the American Museum of Safety Devices and Hygiene in recognition of the honor of the decoration of Officier de l'Instruction Publique, conferred upon him by the French Republic. T. Commerford Martin presided and Dr. Josiah Strong and John W. Lieb, Jr., were among the speakers.

David Marker, master mechanic of the Gautier Works of the Cambria Steel Company, Johnstown, Pa., has been promoted to the position of assistant superintendent of the Gautier's Department. Clarence Meteser, formerly connected with the engineering department, has been made master mechanic.

OBITUARY.

ROBERT W. GARDNER, president and founder of the Gardner Governor Company, Quincy, Ill., died December 21, aged 76 years. He was president of the State Savings Loan & Trust Company of Quincy and was also a member of a number of international scientific societies.

WILLIAM K. DU PONT, a member of the famous family of powdermakers, died December 23 at his home at Montchanin, near Wilmington, Del., aged 32 years. He had been ill with typhoid fever for 10 days, and leaves a widow and three children. Until a year ago he was an official of the Du Pont Smokeless Powder Company, when he resigned and organized the Standard Arms Company of Wilmington.

Beam Test Reports.—The University of Illinois Engineering Experiment Station, Urbana, Ill., has just issued Bulletin No. 14, Tests of Reinforced Concrete Beams, Series of 1906. The tests described are a continuation of the tests discussed in Bulletin No. 4. The topics investigated include the effect of quality of concrete upon the strength of beams, the effect of repetitive loading upon the action of beams, and the resistance of beams to diagonal tension failures. The results of the investigation of diagonal tension failures throw light upon the amount of the vertical shearing stress which may be allowed in reinforced concrete beams not having metallic web reinforcement. The resistance of beams to diagonal tension may be the controlling feature of relatively short beams, and as such failures occur suddenly, and without much warning, a knowledge of the resistance of the concrete is essential. Some beams gave surprisingly low values, and it seems evident that the values allowed by many city building ordinances are higher than should be recommended. The tests of concrete columns and reinforced concrete columns and of reinforced concrete T-beams for 1906 have already been published.

Ontario's Mineral Output.

TORONTO, December 20, 1907.—The sixteenth annual report of the Ontario Bureau of Mines, covering the calendar year 1906, has just appeared. The value of the mineral output of the Province for the year is shown to be $22,388,383. Of this total, $13,353,080 is credited to metallic and $9,305,303 to nonmetallic products of the mines. Pig iron is valued at $4,554,247; nickel $3,839,419; silver, $3,689,286; copper, $960,813; iron ore, $301,032. The value of the whole mineral output was about 25 per cent. in excess of that for the year 1905, the year of greatest previous production. All the valuations are made as at the point of production. If computed at the prices holding at market centers, as is the rule of the British Columbia Mines Department and the Dominion Geological Survey, the worth of the output would be put down at $33,905,574.

In money value the iron ore output of 1906 compares advantageously with that of 1905, the amounts being $301,032 and $227,909 respectively. But the quantity for 1906 was only 128,049 gross tons as against 211,597 tons for 1905. Last year, as in previous years, the bulk of the ore produced came from the Helen Mine in Michipicoten, a hematite property. The magnetite came mainly from the Canada Iron Furnace Company's Radnor mine near Eganville in eastern Ontario, and from the Mineral Range Company's mines near L'Amable in the county of Hastings. The latter are now in a position to ship a considerable tonnage per day, a spur line having been built to connect the mines with the Central Ontario Railway. C. A. C. J.

Vincennes, Ind., on December 19, celebrated the coming of natural gas to that city. After parades and speeches, the gas was turned into three 8-in. pipes at different points and allowed to burn in huge torches about an hour, with 100-lb. pressure, amid the cheers of 20,000 people. The Black Hawk Heat, Light & Fuel Company of Vincennes has contracted to supply factories in the city at 10 cents per 1000 cu. ft. and private consumers at 25 cents. The gas is brought 28 miles from Flat Rock, Ill., where the company has 15 wells. It is expected that factories will be attracted to the city on account of the cheap fuel. The J. T. Towsley Mfg. Company of Cincinnati has contracted to move to Vincennes, where a bonus of $35,000 and seven acres of land was given it. It agrees to erect a plant to cost $110,000 and employ 300 to 400 persons.

A press dispatch from East Liverpool, Ohio, states that copper coated sheets are being successfully rolled at the Chester Works of the American Sheet & Tin Plate Company at Chester, W. Va., across the Ohio River from East Liverpool. The dispatch says that these sheets have been rolled under the direction of Superintendent W. G. Branghman. They are of a bright copper color and are without spot or blemish. These first experiments followed information received from a French inventor of Boulogne, France. It is possible that additions to the mill will be completed at an early date for the manufacture of the new copper sheet product.

Trade Publications.

Packing and Linings.—H. W. Johns Manville Company, 100 William street, New York. Two circulars. One refers to Vanda sheet packing, which is made in two grades—Vanda Black for extreme high pressures and temperatures, and Vanda Brown for less severe conditions of service. The other circular relates to Transite asbestos linings for railway controllers, and Electrobestos arc deflectors.

Drill Presses.—Henry & Wright Mfg. Company, Hartford, Conn. Catalogue. Size, 6½ x 8½ in.; pages, 54. Gives illustrations and descriptions of the company's various sizes and styles of sensitive and radial ball-bearing drill presses. The idler system of belting used is described, and information, such as points of superiority, important instructions, the field of operation and speeds of the machines are given. An illustrated description of the sensitive drills appeared in *The Iron Age* July 4, 1907, and of the radial drills in the issue of August 1, 1907.

Electric Heating and Cooking Devices for Marine Use.—General Electric Company, Schenectady, N. Y. Bulletin No. 4523. Contains illustrated descriptions of small apparatus particularly useful in ships' galleys, staterooms, smoking rooms, sick bays, &c. The line comprises electric radiators, water heaters, cooking and laundering appliances, surgical instrument sterilizers, heating pads, cigar lighters, soldering irons, glue pots, &c.

Packing House Machinery.—Riverside Iron Works Company, Kansas City, Mo. Catalogue N. Size, 6¼ x 9½ in.; pages, 35. Illustrates and describes ice machines, hog scrapers, lard agitators, hog hoists and throw outs, washing machines, kettles and pans, pumps, retorts, presses, lard cooling cylinders, sausage machines, can sealing, capping and crimping machines, &c.

Wood Working Machinery.—Smith & Phillips Mfg. Company, 269 Desplaines street, Chicago, Ill. Two pamphlets. One pertains to a line of stair-routing machines, pulley-mortising machines, sash-grooving machines, edge jointers and shapers, box handle machines and panel raisers, and gives illustrations and prices of bits, &c. The other contains an illustrated description of the Nos. 1, 2 and 3 window frame machines for pocket cutting, pulley mortising and dadoing, giving prices of each type.

Babbitt Metal.—Union Smelting & Refining Company, 604 East Nineteenth street, New York City. Pamphlet. Refers to the company's Record, Iron Age, and Armature brands of antifriction babbitt metals, and defines the particular service for which each brand is best adapted. A broad guarantee is given of the performance of the various babbitt metals under working conditons.

Die Bolt Cutter.—Mummert, Wolf & Dixon Company, Hanover, Pa. Catalogue. Pertains to the construction and operation of the 1, 1¼ and 1½ in. plurality die bolt cutters which were illustrated and described in *The Iron Age* of July 18, 1907. The points of interest about the plurality die head and the cutters are pointed out, and a list of standard cutters regularly furnished on these machines is included.

Standard Wiring Plan Symbols.—General Electric Company, Schenectady, N. Y. Booklet. Gives sample plans of an office or accounting room, and a kitchen and dining room on which are used the standard symbols showing various outlets, fixtures and other wiring devices, adopted by the National Electric Contractors' Association and the American Institute of Architects. Other pages illustrate and describe many of the General Electric specialties indicated by the symbols; among them are key sockets, Security Snap pendant sockets, ceiling rosettes, cabinet panels, wireless clusters, snap switches, flush pocket wall receptacles, floor outlets, receptacles for heating devices, lamp receptacles, combined switch and cutouts, &c.

Screens.—Jeffrey Mfg. Company, Columbus, Ohio. Catalogue No. 69A. Size, 6 x 9 in.; pages, 56. Illustrates the company's numerous types of standard and special screens for treating bone, ash, coal, trap rock, chemicals, clay, coke, plaster, slate, ores and all sharp and gritty materials. Coal chutes, portable outfits for excavating and screening, cylinder dryers, screen cloth, vibrating screens, chains, conveying and elevating machinery, crushing machinery and mining machinery are also illustrated.

Protective Paints.—Goheen Mfg. Company, Canton, Ohio. Pamphlet. Contains reports of tests of the spreading power of carbonizing coating, red lead and graphite paints, made at the Columbus shops of the Pennsylvania Railroad in 1906 by Wm. T. Magruder, and gives views of several mining plants that have been using the carbonizing coating and bridges that have been painted and repaired with it.

Motors, Generators and Wattmeters.—Fort Wayne Electric Works, Fort Wayne, Ind. Bulletins and instruction book. Bulletin No. 1698, superseding No. 1044, deals with the type MPL belted generators for light and power, and No. 1100 with small direct current type L motors, which are shown connected to a radial drill, a pump, and installed on the ceiling. The instruction book No. 3028, superseding No. 3015, refers to type K single-phase integrating induction wattmeters.

Motors and Generators.—Mechanical Appliance Company, Milwaukee, Wis. Illustrated pamphlets. Bulletins Nos. 60 and 61. The former relates to the Watson motors and generators, and the latter is devoted to illustrations descriptive of the company's works and the application of motor drives to various machines.

Milling Machines.—Ingersoll Milling Machine Company, Rockford, Ill. Catalogue No. 16. Issue of September, 1907. Contains description and illustrations of various types of milling machines made by the company, which includes some tools of very large size and capacity.

Wattmeters.—General Electric Company, Schenectady, N. Y. Bulletin No. 4527, superseding No. 4366. Describes the Thomson polyphase induction wattmeters, which are made in three types; one for house service with metal cover, and two for switchboard use, one having a metal cover and the other a glass cover. Catalogue numbers, capacities, &c., are given of the various sizes, and a number of connection diagrams showing the method of installation on different kinds of circuits.

Friction Clutch.—Cowanesque Valley Iron Works, Cowanesque, Pa. Pamphlet. Refers to Rieppel's patent friction clutch pulley, describing its construction and operation, and the advantages of friction clutches. Tables of dimensions and prices of the clutch and pulley are included. Two accompanying sheets contain testimonial letters.

Exhaust Heads, Separators and Ventilators.—Ohio Blower Company, Cleveland, Ohio. Pamphlet. Relates to the Swarthwout cast iron exhaust heads, centrifugal steam separators and gravity closing ventilators. Prices are given.

Pipe Covering.—H. W. Johns-Manville Company, 100 William street, New York. Circular. Pertains to Electroless pipe covering, which it is claimed prevents destructive action on underground pipes due to electrolysis. The pipe covering is ¼ to ⅜ in. thick and is furnished in 3-ft. sections.

Steam Motors.—Universal Mfg. Company, Boulder, Colo. Pamphlet. Devoted to the Universal steam motor, for which high mechanical and thermodynamic efficiency, space economy, simplicity and durability are claimed. This engine uses both impact and expansion of the steam, and can be directly connected to either high or low speed machines.

Metallic Packing.—C. Lee Cook Mfg. Company, Louisville, Ky. Pamphlet. Refers to Cook's metallic packing for steam, gas and air, and illustrates and describes the single and double types of piston rod packing, and single and double types of Corliss valve steam packing. A large list of users is appended.

Engines.—Atlas Engine Works, Indianapolis, Ind. Bulletin No. 136. Describes and illustrates the Atlas gas and gasoline engines, a chief advantage of which is that they will start without cranking. The parts are shown and dealt with separately, and a table is given of the diameter and face of regular and substitute pulleys for the 11 sizes of engine, ranging from 2 to 24 hp.

Portable Instruments.—General Electric Company, Schenectady, N. Y. Bulletin No. 4554. Describes and illustrates the details of the type P3 portable voltmeters, wattmeters and ammeters. The instruments are strong, light and of small size, and are claimed to be permanently accurate and unaffected by external magnetic fields.

Resistance Materials.—Driver-Harris Wire Company, Harrison, N. J. Catalogue D. Lists the company's line of Climax, Advance, S. B., Manganin, German silver and ferronickel resistance materials, giving their properties, resistances, carrying capacities, comparative resistances and prices in tabular form.

A State monopoly of electricity is favored by members of the German Imperial Ministry, who are looking for sources of revenue to meet the greatly increased expenditures of the German Government. The Berlin *Tageblatt*, in a recent issue, quotes a member of the Government as saying that while an enormous capital would be necessary to purchase all the electrical works in Germany, probably over 2000, this capital could be quickly obtained by loan, for which in view of the large profits high interest could be paid. The plan would even include the plants of factories which at present produce current required for their own purposes. They would then be compelled to abandon their own electrical works and obtain the current from the state establishments. The *Tageblatt*, opposes such a monopoly, claiming that it would be especially injurious because the era of the exploitation of electricity for industrial purposes is merely beginning, and it is impossible to predict to what extent electricity may some day influence the whole life of the nation.

NEWS OF THE WORKS.

Iron and Steel.

The McInnes Steel Company, Corry, Pa., is putting a new steel on the market, specially adapted for the making of dies, taps and reamers, called the McInnes Cello oil temper. The company has a large amount of business on hand, necessitating running day and night shifts, and which is expected to keep it in full operation until April.

The furnace of the Cranberry Furnace Company, Johnson City, Tenn., is being operated at its full capacity. The mines from which the furnace is supplied are at Cranberry, N. C., a distance of 34 miles from Johnson City. At present the ore is carried to the latter point on a narrow gauge railroad and must be transferred to Southern cars and conveyed to the furnace. In a short while the narrow gauge road will be run direct to the furnace.

The Newberry, Mich., furnace of the Lake Superior Iron & Chemical Company, Detroit, Mich., was blown out December 16 for an indefinite period.

The Pennsylvania Steel Company has shut down its Lochiel Furnace in Harrisburg, Pa.

The rolling mill of the Seidel & Hastings Company, Wilmington, Del., has been sold at sheriff's sale to William Saulsbury, representing the Equitable Guarantee & Trust Company, which held a mortgage against the property.

The La Belle Iron Works, Steubenville, Ohio, while drilling for natural gas at Berea, W. Va., just opposite its plant, struck a large oil well which is said to be producing about 30 barrels a day.

The Jones & Laughlin Steel Company, Pittsburgh, has shut down its 34-in. blooming mill for about a month, in order to make some extensive repairs and additions to equipment. New roll tables and manipulator will be installed, also a larger and more powerful hydraulic bloom shear. The new roll tables will have the latest improvements and will extend to a greater length on both sides of the rolls.

G. W. McClure, Son & Co., Bessemer Building, Pittsburgh, are building two McClure hot blast stoves at the Edith Furnace of the American Steel & Wire Company, Allegheny, Pa., two McClure stoves for the United Iron & Steel Company, one at Leetonia, Ohio, furnace, and one at West Middlesex, Pa., and a McClure stove, 19 x 85 ft., at the furnace of the Genessee Furnace Company, Charlotte, N. Y. They have recently completed 13 McClure stoves for the Tennessee Coal, Iron & Railroad Company, and six stoves for the Republic Iron & Steel Company, at their Alabama furnaces.

While in Portsmouth, Ohio, last week, W. L. Glessner, president of the Portsmouth Steel Company, directed the prosecution of the work on the new mill being installed for making railroad tie plates, of which the Spencer-Otis Company, Chicago, is to have the exclusive sale. Lathes, planers, shapers, drill presses and other machinery to the value of $25,000 will be installed. Joseph Scholl, formerly of Laramie, Wyo., is to be superintendent and J. F. Butler of Lorain, will have charge of the machines.

General Machinery.

The Curtis & Curtis Company, Bridgeport, Conn., which has been engaged in the manufacture of pipe cutting and threading machinery for the last 25 years, has just completed a large addition to its works which gives the company much larger facilities than it has heretofore enjoyed. By raising the roof of one of the main buildings it has been able to add more than 8000 sq. ft. to the machine shop and office buildings. The company has found the demand for its goods so great in the past that it has been very difficult to manufacture to the best advantage, but hopes now, with the added facilities of both room and machinery, to be able to meet the demands for its Forbes patent die stocks, which have been constantly on the increase. The company has also been able to greatly enlarge its office facilities and has fitted up quite elaborate offices where it is always glad to welcome its friends and customers.

Several companies of Waynesboro, Pa., recently held their annual meetings. The Frick Company elected all of its old directors except I. E. Yost, who was formerly connected with the Emmert Tool Company and who is identified with the Bank of Waynesboro. A 6 per cent. dividend was declared. The Geiser Mfg. Company declared a 7 per cent. dividend and re-elected all former directors. The Victor Tool Company elected Jacob H. Strickler president; T. Scott Cunningham, vice-president, and U. Grant Bishop, secretary and treasurer, two changes being made.

The McCrosky Reamer Company, Meadville, Pa., has recently extended and improved its plant, so that a full line of reamers is now manufactured and a considerably larger output secured.

Hanson & Weseman, Austin, Minn., have been organized to manufacture and repair machinery, and a new shop, 24 x 60 ft., is being built. The company will manufacture a newly invented newspaper addressing machine.

Harry E. McCoy, manufacturers' representative, Ferguson Building, Pittsburgh, in addition to other lines, has been appointed Pittsburgh District representative of the Helwig Mfg. Company, St. Paul and Minneapolis, in the sale of pneumatic tools.

J. S. Beckwith, formerly secretary and treasurer of the Industrial Iron Works, Pittsburgh, has opened an office in room 1806 Machesney Building, Pittsburgh, as representative of the Mead-Morrison Mfg. Company and the Scottdale Foundry & Machine Company. He has also succeeded Arthur Metzger as Pittsburgh representative of the Parker Boiler Company, Philadelphia.

R. L. Beasley, Gordon, Ala., manufacturer of steam pump pulling and pile driving machinery, is organizing the United States Steam Stump & Tree Pulling Company, with a capital stock of $250,000, to develop the business. It is the intention to install a foundry and machine shop, for which considerable machinery will be required.

Contract has been let for the construction of additional repair shops for the Intercolonial Railroad at Riviere Du Loup, Quebec.

The Erie Pump & Engine Company, Erie, Pa., contemplates the erection of an addition to its plant in the spring.

Power Plant Equipment.

The Crookston Water Power & Light Company, Crookston, Minn., is contemplating the construction of a large power plant. Nothing will be done, however, for the present, owing to the tightness in the money market.

Lecompte, La., has adopted plans for the installation of an electric light plant.

The Tippecanoe Electric & Power Company has been organized at Monticello, Ind., and incorporated with $75,000 capital stock. The directors are Abram S. Strauss and Henry Meyer of Chicago, and J. Garrett Smith of Monticello. There is a dam across the Tippecanoe River at Monticello, now operating a flouring mill. The new company has secured a 50-year lease of this power from W. T. Wilson, Monticello. It is proposed to build a new and larger dam and a power house. The company has been granted a 25-year franchise for lighting the town of Monticello.

The Foos Gas Engine Company, Springfield, Ohio, has purchased the business of the Marinette Gas Engine Company, comprising the line of Walrath multiple cylinder engines for electric and power work from 20 to 500 hp. This engine has been on the market for over 10 years, is highly recommended by its present users, and is one of the best engines of its type. This line of vertical engines with that of horizontal engines from 2 to 90 hp. and their various equipment which have been on the market for 20 years, makes the Foos line very comprehensive. The company operates what is said to be the largest plant devoted exclusively to the manufacture of gas engines, and its business is being rapidly extended.

Foundries.

At Lenoir City, Tenn., the Bass Foundry & Machine Company is having a successful season. It has a capacity of 300 car wheels and 30 tons of gray iron castings per day. It has a machine shop in connection with the foundry and does a large amount of machine work. C. H. Watson is now manager and during his incumbency the capacity of the foundry has been doubled.

The Albany Foundry Company, Albany, N. Y., has increased its capital stock and has absorbed the real estate, patents, machinery, &c., formerly owned by J. E. Gaitley, in connection with the Troy Nickel Works. The change in no way interferes with the operation of the latter company, which will continue its business as heretofore under the same name. J. E. Gaitley is president; James F. Magee, vice-president and general manager; John P. Gaitley, secretary, and Andrew McNamara, treasurer.

Fires.

The foundry of C. H. Allmond & Co., Youngstown, Wash., was recently damaged $10,000 by fire.

The power house of the substation of the Cataract Power Company at Irondale, Ont., was destroyed by fire December 19.

The iron foundry of Charles Dale, Silverton, Colo., was destroyed by fire December 12, the loss being about $5000.

Hardware.

The Buhl Stamping Company, Detroit, Mich., is increasing its tinning department by the addition of a new tinning house, which will add about 50 per cent. to its capacity. Several new presses purchased from the E. W. Bliss Company, Brooklyn, N. Y., are being installed. The company's plant, which had been closed for several weeks, resumed operations December 16 with a full force of 300 men. The number of inquiries received within the past 10 days are taken to foreshadow a good volume of incoming business after the first of the year.

Miscellaneous.

The Monarch Machine Works, Altoona, Pa., is having an increasing demand for the Riggin blow-off valve, which it manufactures.

The Southwestern Iron Company, Guthrie, Okla., has closed a deal with the Dunlap Pulley Company, Tulsa, Okla., for the manufacture of 500 pulleys per day, beginning the first of the

year. The iron company is doing an extensive business and will double the capacity of its plant. The Dunlap pulley is of a very unique pattern. It is made in two pieces, each half being an exact counterpart of the other. It has no bearings, brackets or intermediate pulleys, but clamps on the shaft, and it is claimed to be nonslipping and perfectly balanced.

The Pittsburgh Electro-Galvanizing Company has been organized with a capital of $15,000 and has secured the building formerly occupied by the Fox Brass & Bronze Company, 2324 Smallman street, Pittsburgh, which is being equipped with the most modern devices for galvanizing by the electric (cold) system, which is particularly adapted for small work. John A. Hanlon is president, Charles F. Fisher, secretary and Thomas J. Hanlon, treasurer.

Wilcox, Crittenden & Co., Middletown, Conn., announce that their galvanizing and tinning department which has been in course of construction since August 1 is now completed and in operation. This department is contained in a concrete building, 200 ft. long and 45 ft. high, the entire floor space covering an area of 20,000 sq. ft. The department is one of the most complete in the way of equipment and has a daily capacity of about 50,000 lbs.

The Standard Scale & Supply Company, Pittsburgh, Pa., has appointed the Lowell Scale Company, 100 Pearl street, Boston, Mass., its New England representative. F. L. Arms, who is now president of the Lowell Scale Company, was formerly New England representative for the Standard Scale & Supply Company and later its New York manager, and has been identified with the company for a number of years.

Tate, Jones & Co., Inc., offices in the Empire Building, Pittsburgh, and works at Leetsdale, Pa., where Kirkwood burners and portable oil furnaces are manufactured, has recently received an order from the Keith Car & Mfg. Company, Sagamore, Mass., for six oil burning furnaces of various types, including oil pumping and erecting system complete, for use in its hammer and buildozer departments.

Central and South American Notes.

SAN JOSÉ, CENTRAL AMERICA, December 3, 1907.—The friendly attitude of the United States has had a very good effect on these countries and their business interests. Everything is more stable and the outlook is brighter than before the war. Railroad work has been resumed on the central and northern lines, several cargoes of rails and other material having arrived. The Honduras Government is doing all it can to reconstruct the damaged lines of Puerto Cortez. On the northern coast a number of Americans are planting "fincas" of bananas and coffee. The soil is rich and labor is relatively cheap.

On the Yucatan Peninsula railroads are also having a boom. Much of the material comes from the United States, as also the rolling stock. The main line now penetrates to the sisal plantations, which are so valuable in this region. Steel frame houses are going up in many of the interior towns, and American hardware is to be found in not a few of the stores. The Vera Paz, Yucatan & Belize Railroad is being broached again. This line would open up a country rich in woods, such as mahogany, ebony, brazilwood, logwood and many other valuable kinds. It is also a rubber and coffee country. So far it is only sparsely settled; our communication with the coast is kept up through the rivers.

The Bolivian copper, silver and gold mines are doing so well that a British syndicate is projecting a railroad from the Pacific to La Paz and Sacre, with branches to the principal mines. The Entre Rios Railroad is working northward toward Bolivia also, thus connecting La Paz when the line is finished, with the Chili-Argentine Railroad to the Andes.

Business in Valparaiso and Santiago has been slack of late, but it is expected that with the completion of the Transandine Railroad and the coming of two new steamer lines from Europe a revival of business and the opening up of new industries in the southern provinces will take place. The copper mines of Chanorcillo y Anexas are daily augmenting their output. This is also looked forward to to increase business on the coast. Gold mining in the Tierra del Fuego section is steadily increasing, and gold mills and amalgamators have lately arrived at Punta Arenas from the United States for these mines.

In Argentina much of the land south of Bahia Blanca is being taken up and put under cultivation. This is a great wheat and cattle section, though much wool is produced also. Supplies, hardware, agricultural implements, &c., mostly come to this section through Buenos Ayres, which, now with its 1,000,000 inhabitants, is as lively and stirring as Chicago. Mr. Root's visit to this section has helped the country in making itself known and appreciated, and imports from the United States have already increased. Several new street railroad lines are being laid in Buenos Ayres (the capital), and new cars are coming for them from Philadelphia. Wood is very little used in construction, most buildings being of stone, marble and brick, with steel frames and girders. Several new steel piers will be also erected at Buenos Ayres and Rosario. The latter imports large quantities of agricultural implements and hardware, exporting wool, wheat, hides and alfalfa. Montevideo, which is nearer the mouth of the Rio de la Plata, exports and imports in the same lines, but to a much larger extent, the Saladeros of Uruguay alone exporting many millions in dry and salt beef. Rio Grande do Sul, though full of German firms and business men in every line, is gradually awakening to an appreciation of our hardware and implements generally. During the last three months scarcely a cargo of goods has arrived from the north at Pelotas, Porto Alegre or Rio Grande without consignments of farming tools, plows, &c.

The mines of Diamantina and Minas Geraes are to be supplied with American mills and machinery, and the Government expects to subsidize a railroad line through the mining districts. Matto Grosso is gradually opening up, mostly for agriculture, and the railroad is intended to tap this section also. A special fleet of steamers will be built for the Uruguay River; they will be of very light draft. Much of the business of this section now goes via Montevideo and Buenos Ayres. Intending travelers or salesmen should take steamer for those ports and then transship for the interior.

Just as the Germans have a monopoly of all business in southern Brazil, so have the Italians to a large extent in Buenos Ayres, where, naturally, they have grown very wealthy and have transplanted many of their business ideas. There are weekly lines of first class Italian steamers between Buenos Ayres and Genoa, Marseilles and Barcelona. These steamers not only bring in large numbers of passengers, but miscellaneous cargoes, including iron and steel, machinery and general hardware. The British, Germans, Danish, Spanish, French, Dutch and Austrian liners all have weekly, or at least semimonthly, steamers to Montevideo, Buenos Ayres and Rosario. Millions monthly are lost to New York and the United States generally by not securing a good proportion of this trade, which would come with necessary transportation facilities to Latin America. As reciprocity in business would be the real link, why not have our business men investigate the immense output of raw material which Latin America now offers to the world? Let alone copper, iron, silver, gold and other ores, there are rubber, precious woods, yerba mate or Paraguay tea, farina, coffee, cacao, dyestuffs and a thousand other products in abundance to be transported to the United States. Then the great rivers, such as the Marañon, Tocautins, Madeira, Mamoré, Rio Negro, Uruguay, Paraguay and others, are navigable by light draft steamers, and from which enterprising Americans could draw many millions yearly by either putting on new lines or opening up navigation under the auspices of the Brazilian, Bolivian or Venezuelan governments.

A meeting of the creditors of the Middletown Car Works, Middletown, Pa., was held December 20 for the purpose of endeavoring to adjust financial matters. An extension has been granted of one year and a committee of seven has been appointed to aid the present management in conducting the business. The company has contracts on its books amounting to $1,000,000, and has also quite a large amount of material which can be used in finishing this work.

At the annual meeting of the Alabama Consolidated Coal & Iron Company the following Board of Directors was elected: Joseph H. Hoadley, D. G. Boissevain, Richard H. Edmonds, James A. Green, Edward K. Hill, Guy R. Johnson, Walter H. Knight, Kenneth K. McLaren and William C. Seddon.

The Iron and Metal Trades

The most important event of the week is the announcement that the United States Steel Products Export Company has sold recently for shipment during the first half of 1908 to England and Wales 100,000 tons of Sheet and Tin Plate Bars. This is the first important transaction of this character since the middle of the current year, when a round lot was sold for delivery during the last quarter of this year.

The Pig Iron and Iron Ore Committee held a meeting last week, at which W. A. Rogers of Buffalo, representing large merchant furnace interests, was invited to become a member. The situation was discussed and it was made clear that some low prices have been named.

Detroit Stove manufacturers have been the first to act in the way of purchasing material for the first quarter and the first half of the coming year. They bought between 13,000 to 14,000 tons of Southern and Northern Irons, the former on the basis of $13 for No. 2 Birmingham, and the latter on the basis of about $16.50, at furnace. This is the first serious test of the position of buyers and sellers. There is considerably more inquiry in all the leading distributing markets, and it is expected that when the holidays are over and consumers have determined just where they stand, quite a buying movement will develop. It is undoubtedly true that some melters have enough Iron due them to carry them along over the first quarter, but it is true also that many others will need to cover, possibly only by purchases from hand to mouth. In some sections Merchant Iron is accumulating in spite of the restriction of output, but it is nearly always the case that the stock thus piling up is due consumers on old contracts who may or may not take the metal.

There has been some talk of sales of Southern Iron for shipment abroad. Nothing has been done, and so far as Foundry Iron is concerned there is no chance of business being closed at present prices abroad. It is believed possible, however, that some tonnage of Southern Basic Pig may be marketed on the Mediterranean.

New business in finished Iron and Steel has been light and bookings are at the rate of about 30 per cent. of the capacity. Shipments, however, are fully double that amount, taking the industry as a whole.

It is estimated that the shipments of fabricated material by the American Bridge Company during 1907 will total 650,000 tons as compared with 577,000 tons in 1906. There is a little more inquiry for Plates, and it is expected that the new Standard Oil Refinery and a projected Water Pipe line in New Jersey will call for a considerable tonnage.

The Eastern Bar Iron manufacturers have decided to close down entirely for two weeks. The independent makers of Sheets and Tin Plate at a meeting at Pittsburgh approved of a plan to keep output close to the requirements of the trade and to refuse to shade prices.

The largest Cast Iron Pipe company has taken the contracts for 3500 tons for Baltimore and 2500 tons for St. Louis.

There has been more activity in the Coke trade, and a good deal of figuring for the first half is going on. One contract for about 200,000 tons of Furnace Coke has been placed, and a large seaboard founder placed his order for the first six months for Foundry Coke.

There has been quite some activity in Lead at figures advancing from close to 3.40c. up to 3.60c., New York. Copper has moved upward a little, apparently due to speculative operations. Consumers have bought little, but are sounding the market for January metal.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec.24, 1907.	Dec.18, 1907.	Nov.27, 1907.	Dec.26, 1906.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	*$18.25*	$18.25	$18.75	$25.00
Foundry No. 2, Southern, Cincinnati	*16.25*	17.00	18.75	26.00
Foundry No. 2, Local, Chicago	*18.00*	18.25	19.25	25.50
Bessemer, Pittsburgh	*18.50*	19.90	19.90	23.35
Gray Forge, Pittsburgh	*17.90*	18.40	18.90	22.85
Lake Superior Charcoal, Chicago	*23.50*	23.50	25.00	26.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.50
Open Hearth Billets, Phila	30.00	30.00	30.00	34.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	*12.00*	12.00	13.75	18.50
Steel Rails, Melting, Phila	*11.50*	11.50	12.00	20.00
Iron Rails, Chicago	*15.00*	15.50	16.00	28.00
Iron Rails, Philadelphia	17.50	17.50	17.50	27.75
Car Wheels, Chicago	*20.00*	22.00	22.00	25.25
Car Wheels, Philadelphia	19.00	19.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh	*12.50*	12.50	14.50	20.00
Heavy Steel Scrap, Chicago	*10.75*	11.50	12.00	17.00
Heavy Steel Scrap, Philadelphia	*11.50*	11.50	12.00	....
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.75	1.75	1.75	1.83½
Common Iron Bars, Chicago	1.75	1.75	1.75	1.81½
Common Iron Bars, Pittsburgh	1.60	1.55	1.60	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.65
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.80	1.70
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	*13.50*	13.00	13.75	23.50
Electrolytic Copper, New York	*13.37½*	12.62½	13.62½	23.25
Spelter, New York	*4.30*	4.25	4.70	6.67½
Spelter, St. Louis	*4.20*	4.15	4.60	6.55
Lead, New York	*3.60*	3.50	4.25	6.30
Lead, St. Louis	*3.50*	3.35	4.10	6.05
Tin, New York	*27.00*	26.10	31.20	42.80
Antimony, Hallett, New York	*8.50*	8.50	9.00	25.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$4.09	$4.09	$4.09	$4.09

Chicago.

FISHER BUILDING, December 24, 1907.—(*By Telegraph.*)

A reassuring feature indicative of financial improvement is seen in a continued gain in the local supply of currency. Clearing house certificates are still in use, but to a more limited extent, the banks as a rule being now about to supply cash for payrolls when for any reason it is required. The prompt and energetic action of producers in curtailing the production of crude and Finished Iron to a level with consumption has had a beneficial effect in preventing demoralization. Most of the mills of the Steel Corporation and independent interests in this district continue to run intermittently or at greatly reduced capacity. The 9, 12, 21 and 22 in. mills of the Illinois Steel Company's Bay View plant at Milwaukee, which have recently been closed from time to time, were started up again last week; the Structural mill at its South Works is shut down. Contracts for 2350 tons of Structural Material were closed by the American Bridge Company, to which was added 4000 tons of specifications. Requirements now being figured on involve about 6000 tons of railroad material, a good portion of which seems likely to crystallize into orders in the near future. New business in Plates and Sheets is extremely light, and specifications are coming in slowly. An order for 2500 tons of Cast Iron Water Pipe for St. Louis was taken by the United States Cast Iron Pipe & Foundry Company. Only three of the Merchant Iron furnaces in the Chicago District are now in blast, so, notwithstanding the great decrease in consumption, the danger from accumulated stocks is diminished. Pig Iron is extremely weak and prices are subject to nego-

tiations on each transaction. In the absence of a demand for that period, 1908 prices have not been established. The Scrap Iron market is badly demoralized and each new consignment of railroad material drags prices a few points lower.

Pig Iron.—Inquiries for forward requirements are still numerous and some of them are beginning to assume a firmer tone. So far no local sales of this character are reported, nor is it likely under the circumstances that any will be placed until after the first of the year. Consumers are not yet satisfied that prices have reached the lowest point and are seemingly hopeful of being able to purchase more advantageously a little later on. It is not expected, therefore, that any buying to speak of will develop until along in January, when the trend of financial and commercial affairs will be more fully developed and the ultimate level of prices can be better gauged. The few sales made during the week have been of the hand to mouth order and represent almost exclusively present needs. There is a spread of at last $1.50 between the nominal market and the prices at which some business is being placed. While a basis of $14, Birmingham, for No. 2 Foundry seems to still fairly represent the market in a general way, some sales have been made at lower prices. While $12.50 is known to have been offered for moderate tonnage, such an extreme price is as far as known, applied to lots of either indefinite analysis or off grades for immediate or nearby delivery. Of eight merchant furnaces in the Northern District, five are now out, those still operating being the Zenith Furnace Company, one; Northwestern Iron Company, one; Iroquois Iron Company, one. Those idle are the Spring Valley Iron & Ore Company, one; Northwestern Iron Company, one; Iroquois Iron Company, one; Federal Furnace Company, one, and Thomas Furnace Company, one. It will be seen that no large tonnage is being piled up to menace the market when the demand improves. It may be said that the whole situation, as respects both consumers and producers, is a waiting one and is not likely to be disturbed by decided action until a more settled condition prevails. The following prices are for December delivery, f.o.b. Chicago:

Lake Superior Charcoal	$23.50 to $24.00
Northern Coke Foundry, No. 1	18.50 to 19.00
Northern Coke Foundry, No. 2	18.00 to 18.50
Northern Coke Foundry, No. 3	17.50 to 18.00
Northern Scotch, No. 1	19.50 to 20.00
Ohio Strong Softeners, No. 1	19.75 to 20.25
Ohio Strong Softeners, No. 2	19.25 to 19.75
Southern Coke, No. 1	18.85 to 19.35
Southern Coke, No. 2	18.35 to 18.85
Southern Coke, No. 3	17.85 to 18.35
Southern Coke, No. 4	17.35 to 17.85
Southern Coke, No. 1 Soft	18.85 to 19.35
Southern Coke, No. 2 Soft	18.35 to 18.85
Southern Gray Forge	16.35 to 16.85
Southern Mottled	15.35 to 15.85
Malleable Bessemer	18.50 to 19.00
Standard Bessemer	21.40 to 21.90
Jackson Co. and Kentucky Silvery, 6 %	29.40 to 29.90
Jackson Co. and Kentucky Silvery, 8 %	31.40 to 31.90
Jackson Co. and Kentucky Silvery, 10 %	33.40 to 33.90

(*By mail.*)

Billets and Rods.—The mills are making no effort to press sales, and in consequence of the small demand, the market is extremely quiet and prices are unchanged, Forging Billets being quoted at $33 to $34, Chicago. Wire Rods are also inactive and in the absence of business prices are nominally quoted at $34 to $35, Pittsburgh.

Rails and Track Supplies.—The market is barren of reported transactions in Rails, and the whole question of 1908 tonnage will probably be passed over into the coming year. With the matter of Rail section, design and composition practically settled there is seemingly nothing in the way of the completion of purchases for this period, except the solution of the financial problem. An early clearing of the situation in this respect would doubtless be followed by the development of tonnage enough to supply the full Rail making capacity of mills. A little more inquiry for Track Supplies is noted, but no orders of consequence have resulted from it. There is nothing doing in Light Rails, the prices of which are not overly firm at current quotations. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 2c. to 2.10c., according to delivery; Track Bolts, 2.50c. to 2.60c., base, Square Nuts, and 2.65c. to 2.75c. base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb. sections, $32; 20-lb., $33; 16-lb., $34; 12-lb., $35 f.o.b. mill. Standard Sections, $28 f.o.b. mill, full freight to destination.

Structural Material.—Of the 2350 tons of new fabricating orders taken by the American Brige Company in the past week, 750 tons were placed by the Steel Corporation, the remainder being comprised of outside contracts. In addition to this tonnage, 4000 tons of specifications have been received by the American Bridge Company, which is a distinct improvement over the records of previous weeks. There are pending approximately 6000 tons of railroad bridge material, 2000 tons of which, at least, are likely to be placed soon after the first of the year. The Structural mill of the Illinois Steel Company is shut down and specifications are accumulating very slowly. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Very few new orders are coming in and such as are received are for small lots, evidently required to complete work in hand. Specifications on existing contracts have been held up to a large extent, and unless additional tonnage is furnished within the next 30 days the mills will have pretty nearly reached the end of rolling schedules. Jobbers' stocks are moving slowly, what demand there is being for immediate use. There have recently been some fair shipments of Tank Plates required for the completion of tank contracts, but stock orders are conspicuously absent. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c.; to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—While a few new orders continue to come in, the aggregate tonnage thus supplied adds but little to the general total. Production has been sharply restricted, so that, notwithstanding the reduced demand, there is no accumulation of stocks being piled up. Black Sheets continue to be shaded $2 by some mills, and a like concession on Galvanized Sheets has resulted from the recent drop in Spelter. Store prices herewith quoted are subject to a shade of $1 a ton on round lots. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; No. 28, 2.78c.; No. 29, 2.88c.; No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c.; Sheets from store: Blue Annealed, No. 10, 2.25c.; No. 12, 2.30c.; No. 14, 2.35c.; No. 16, 2.45c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3.10c.; Nos. 18 to 20, 3.25c.; Nos. 22 to 24, 3.40c.; No. 26, 3.60c.; No. 27, 3.80c.; No. 28, 4c.; No. 30, 4.50c. to 4.55c.

Bars.—The Bar situation is extremely quiet so far as the development of business is concerned. Prices, however, do not seem to have suffered and are being held on both Steel and Iron at current quotations. But a very small portion of the mill capacity of this district is now in operation, and a general resumption will be deferred until business is more freely offered. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.75c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—The demand is wholly confined to small requirements for immediate use, there being no disposition on the part of jobbers to increase stocks beyond the keeping up of a normal assortment. The volume of business being transacted by jobbers is likewise small, since construction and extension work is greatly curtailed by unfavorable weather and other conditions. Prices remain unchanged, and the following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—With contract boiler shops running extremely light, there is but a small demand for Merchant Tubes. Shipments from jobbers' stocks are composed mainly of orders for refitting and repair work. Immediate requirements are all that is now considered, and no future orders are being placed. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 3 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Implement makers and other consumers are buying but little material and the withholding of specifications have left the mills with but little work on hand. It is believed that considerable improvement will be noted early in the coming year. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c.; Iron Finish, 1½ x ½ in. and larger, 1.78c., base; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1¼ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—Even if financial conditions were undisturbed, a strong buying movement could hardly be expected, owing to the downward trend of Pig Iron. There is no doubt that a considerable tonnage in the aggregate is being held up in the hope of securing better prices later on. No new business in the way of lettings is reported and orders are restricted to small lots for maintenance. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., $34; 6 to 12 in., $33; 16-in. and up, $32, with $1 extra for Gas Pipe. The only transaction reported for the week that included tonnage of importance was an order for 2500 tons of 12-in. Water Pipe for St. Louis, Mo., taken by the United States Cast Iron Pipe & Foundry Company.

Old Material.—Prices continue to decline and have now reached an extremely low level. However attractive these values may appear they have failed to stimulate buying. There is practically no demand from any source. Foundry consumption has been greatly diminished by the reduction of working forces or by the complete shutdowns of plants. Mills are likewise consuming very little material, being either out of operation or running very light. Stock piles are being added to in a moderate way upon especially attractive offerings. The railroad lists out this week include 3400 tons from the Chicago, Milwaukee & St. Paul, and 4650 tons from the Chicago, Burlington & Quincy. A large list approximating 11,000 tons is expected to come out next week, and in the present state of the market further weakness will most likely develop. In the two lists above referred to there are 1200 tons of Iron and 1200 tons of Steel Rails. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$15.00 to $15.50
Old Steel Rails, rerolling	12.00 to 12.50
Old Steel Rails, less than 3 ft	12.00 to 12.50
Relaying Rails, standard sections, subject to inspection	22.00 to 25.00
Old Car Wheels	20.00 to 20.50
Heavy Melting Steel Scrap	10.75 to 11.25
Frogs, Switches and Guards, cut apart	11.00 to 11.50
Mixed Steel	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates	$13.50 to $14.00
Iron Car Axles	16.00 to 16.50
Steel Car Axles	15.50 to 16.00
No. 1 Railroad Wrought	10.50 to 11.00
No. 2 Railroad Wrought	9.50 to 10.00
Railway Springs	10.00 to 10.50
Locomotive Tires, smooth	15.50 to 16.00
No. 1 Dealers' Forge	8.50 to 9.00
Mixed Busheling	7.50 to 8.00
Iron Axle Turnings	7.00 to 7.50
Soft Steel Axle Turnings	7.00 to 7.50
Machine Shop Turnings	7.00 to 7.50
Cast Borings	5.00 to 5.50
Mixed Borings, &c	5.25 to 5.75
No. 1 Mill	7.00 to 7.50
No. 2 Mill	6.00 to 6.50
No. 1 Boilers, cut to Sheets and Rings	7.00 to 7.50
No. 1 Cast Scrap	12.50 to 13.00
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	10.00 to 10.50
Agricultural Malleable	9.50 to 10.00
Pipes and Flues	8.00 to 8.50

Metals.—The entire list of metals is weak and inactive. Consumers are unwilling to anticipate needs even at the low prices now prevailing, and are only buying what they actually need. Spot requirements for small lots of Copper command a slight advance over what would be asked for deliveries a month or two ahead, but users prefer to pay the difference rather than to make future committments. We quote as follows: Casting Copper, 14c.; Lake, 14½c. to 15c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31c.; small lots, 32c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4½c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13c.; Heavy Copper, 13c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10½c.; Light Brass, 6½c.; Lead Pipe, 4¼c.; Zinc, 4c.; Pewter, No. 1, 21c.; Tin Foil, 24c.; Block Tin Pipe, 26c.

The Diamond State Steel Works at Wilmington, Del., which have long been idle, may be started early in 1908 if negotiations with New York capitalists result favorably.

Philadelphia.

PHILADELPHIA, PA., December 23, 1907.

Generally speaking, the market for crude and finished materials has not been active the past week, although transactions in Pig Iron have shown some indications of improvement, and a decidedly better feeling as to the future prevails. While there have been some pretty fair inquiries in the market, the tendency on the part of buyers seems to be rather toward deferring business until after the turn of the year. In a few cases, however, where their fiscal years does not coincide with the calendar year, buyers have placed business for forward delivery, but as a rule the tonnages taken have been far below their usual requirements. It is to be expected that business in all branches of the trade will be conducted along conservative lines until there has been some readjustment of affairs in general, so as to meet the change in conditions.

Pig Iron.—There has been some improvement in the demand for Pig Iron, particularly in the Foundry grades. Inquiries are being received in greater quantity, and the tonnages asked for are larger. Consumers are getting ready to place business for next year; some for the first quarter, others for the first half, while there has been some inquiry for delivery during the entire year. In some cases inquiries have been followed by orders, mostly for Iron for first quarter delivery, although a few contracts have been made, covering shipments during the first half of 1908. The tonnages, while not very large, show considerable improvement over those which have been usually taken during the past month or two. Pig Iron production continues to decrease. Several additional stacks went out in this territory during the week, and others are expected to go out before the end of the year. Members of the Eastern Pig Iron Association, which met in this city last week, have determined not to pile Iron, and will blow out stacks as soon as orders on hand are taken care of. Furnacemen report orders increasing, but still not large enough to warrant production at current prices, which in many instances are said to be below cost. The situation was carefully gone over, and the general feeling as regards the future demand was much more hopeful. The financial situation shows further signs of improvement, but it is hardly expected that any material benefit will be experienced until well on in the coming month. Prices have shown but little change. On some grades of Iron they are very firm; on others inclined toward weakness. Sales of No. 2 X Foundry Iron have been made at prices varying from $18.25 to $18.75, delivered, for the standard grades. Quantities range from carloads for prompt delivery up to 300 and 500 tons for delivery in the first quarter and first half of next year. One lot of 1000 tons for forward delivery was taken at a figure close to $18.50. There is considerable inquiry for this grade of Iron for delivery over the first half and even for the full year, the quantity running up to 5000 tons in one case, and this, it is said, represents only a portion of the inquirer's estimated requirements. Sales of Pipe Iron have improved, and one of 1000 tons of this grade was made at close to $16.50, delivered. There has been some further demand for this grade, which it is believed will develop into business in the near future. Forge Irons have been rather dull. Mills have been running at greatly reduced capacities, and have recently shut down completely, so that until the situation in the Bar Iron market improves not a great deal of activity in Forge Iron can be expected. There has been no demand for Basic Iron. Steel mills in a number of cases are not taking in the Iron previously bought, and there is practically no market for this grade at the time. Prices, however, are nominally quoted at $17.25 to $17.50, delivered. A few sales of Low Phosphorus Iron have been made to the Steel casting plants, but the demand is not urgent. A fair tonnage of misfit Low Phosphorus Iron has been sold, mostly in moderate sized lots, at prices ranging from $22 to $24, according to analysis. Prices for delivery in buyers' yards for the early portion of next year, eastern Pennsylvania and adjoining territory, while to some extent still nominal, range about as follows:

No. 2 X Foundry	$18.25 to $18.75
Gray Forge	16.50 to 17.00
Basic	17.25 to 17.50
Low Phosphorus	25.00 to 25.50

Ferromanganese.—There has been practically no demand the past week. Importations are very light, and in the absence of business Ferro is quoted at from $48 to $49, Baltimore.

Steel.—Mills have been temporarily closed down for repairs and stock taking, but will scarcely resume until the demand, which is now extremely light, shows improvement. Prices are nominally unchanged, and ordinary Rolling Steel is still quoted at $30 to $31, but could no doubt be had at $29 if a fair tonnage came out, while $33 to $35 is still named as the price of Forging Steel.

Plates.—The demand for Plates shows some little improvement. There is more inquiry, and while some pretty fair lots are being figured on, there is a disposition on the part of buyers to withhold business until after the close of

the year. Consumers are reported to be booking more orders, which, however, have not yet been covered by Plate orders placed with mills. Prices are being firmly maintained and we quote as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.85	1.90
Flange or Boiler Steel	1.95	2.05
Commercial Firebox	2.05	2.10
Marine	2.25	2.30
Locomotive Firebox Steel	2.35	2.40

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00

Structural Material.—The demand continues light, pending the close of the year. Several large propositions are expected to be placed at an early date. The contract for the Ninth street bridges for the Philadelphia & Reading Railroad elevated tracks, bids for which were opened last week, has not yet been placed, but it is expected that it will be awarded almost any day. Prices of Structural Material are being firmly maintained and are quoted at 1.85c. to 2c. according to specification.

Bars.—At a meeting of the Eastern Bar Iron Association, held last week, it was decided to re-affirm prices of Refined Iron Bars at 1.60c., Pittsburgh, which is equivalent to 1.75c., Philadelphia and adjoining territory, as it was believed that no increased volume of business would result from a reduction. Almost all the mills have been short of orders for some time, and a suspension of work at the mills has been made until January 6, which may be prolonged if business conditions do not warrant resumption at that time. The local demand for Bars during the week has been very light, the business coming out being confined entirely to small lots for prompt shipment, business of which character can usually be taken care of from stocks on hand.

Sheets.—Orders are being placed in small quantities only, sufficient to cover immediate needs of consumers, there being practically no forward buying at the time. Mills have in most cases shut down over the holidays, manufacturers being able to supply current demand from stock. Prompt shipments still command full prices, which are as follows for mill shipments, with a tenth extra for small lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Old Material.—The market continues extremely quiet, there being no movement of Scrap of any kind. Mills are for the greater part temporarily closed down, and shipments on old contracts have almost ceased. In the absence of business quotations can be only approximately named, and are nominally as follows, for prompt delivery only, in buyers' yards, eastern Pennsylvania and adjoining territory:

No. 1 Steel Scrap and Crops	$11.50 to $12.00
Low Phosphorus	16.00 to 16.50
Old Steel Axles	18.50 to 19.00
Old Iron Axles	23.00 to 24.00
Old Iron Rails	17.50 to 18.00
Old Car Wheels	19.00 to 20.00
Choice No. 1 R. R. Wrought	14.50 to 15.00
Machinery Cast	15.50 to 16.00
Wrought Iron Pipe	12.50 to 13.00
No. 1 Forge Fire Scrap	11.50 to 12.00
No. 2 Light Iron	8.00 to 8.50
Wrought Turnings	9.00 to 9.50
Stove Plate	12.50 to 13.00
Cast Borings	7.00 to 7.50
Grate Bars	13.00 to 13.50

Coke.—The market for both Furnace and Foundry Coke has not been very active, owing to the blowing out of furnaces and decreased foundry operations. In this territory, the quotations of Coke show variation to some extent owing to the fact that there is a difference in the freight rates from the Connellsville and Mountain districts. From the former the rate to Philadelphia and nearby points is $2.15, while from the latter it is $1.85. Mountain Coke for Foundry use is quoted at $2.75 to $3, at oven, while Furnace Coke is quoted at $2 to $2.25, at oven. Standard Connellsville Coke for Foundry use is quoted at about $2.75, at oven, while Furnace Coke commands $2.25, at oven, but the demand is extremely light.

The output of iron ore in Germany in the past 10 years shows a steady increase. In 1897 it was 10,117,000 tons, and in the next five years averaged about 12,000,000 tons, increasing to an average of 15,500,000 tons in 1903 and 1904, to 16,848,000 tons in 1905 and 19,505,000 tons in 1906. The imports were 3,186,000 tons in 1897 and had risen in 1906 to 7,629,000 tons. Of this latter total Sweden contributed 2,360,000 tons and Spain 3,632,000 tons.

Cincinnati.

CINCINNATI, OHIO, December 24, 1907.—(*By Telegraph.*)

Whether due to the sentiment of the season or really the beginning of a new era of trade awakening, certain it is there are reasons for the statement that an increasing activity is on in many branches of the Iron and Steel industry in this section. This activity, it is true, partakes at the present time more of inquiry than sale or purchases, but it is of that solid kind that carries conviction, and it is also true that the change is very recent indeed. Local sales agents of Pig Iron have done some business the past few days, which could not be said a week or so ago, and there are some substantial inquiries coming in for tonnages of respectable size. In the finished lines, stores report little if any more business going, but feel that a revival is due about January 15. Prices are well maintained and deliveries are practically immediate on anything. In the Scrap line the market is dead, and dealers expect little relief before March or April.

Pig Iron.—One of the principal topics of interest among Pig Iron sellers this week is the result of Detroit purchases, which tend to fix a new price on both the Northern and Southern product and marks probably the first sale of any size for the first quarter and half of 1908 requirements. In round figures these concerns representing leading stove interests have taken 13,000 to 14,000 tons for first quarter and half delivery of Southern Nos. 1, 2, and 4 Northern No. 2 and 8 per cent. silicon. It is pretty generally understood that there was some close competition, although wise ones figured the furnace which has carried the largest contracts of the combination mentioned would secure the business, which it did, or the greater part of it. The contract price of Southern ($13 Birmingham) it appears was not sufficiently attractive to inspire cutting after the figures came out, and the furnaces competing withdrew. It is understood that $13.50 was the best concession outside of the sale price. Northern Irons are weaker, too, through this transaction, and it is tacitly understood that $16.50, at furnace, is the figure at which shipments from the Hanging Rock District will be based, and $22.50, at furnace, the selling price on the 8 per cent. silicon, about 2000 tons of which was a part of this sale. A prominent official of the largest of the Detroit concerns under consideration, interviewed in a Detroit paper, stated that this purchase of Iron was the largest single order ever placed by that concern, which melts from 50 to 75 tons a day, and that he had every confidence in the times and the promise of a quick return to normal trade conditions, pointing to his deal in confirmation. There is an inquiry in to-day from a large car manufacturing concern of St. Louis for 500 tons of No. 1 Foundry for Detroit delivery in the first quarter, and another of from 500 to 1000 tons of Basic, first quarter. The first local melter to come into the market is the owner of a new foundry which expects to begin business early in January, and he has bought 300 tons of Northern, Southern and Virginia Iron, Nos. 2 and 3 Foundry, and it is understood, on a basis of $13, at furnace, for the Southern and better than $17 on the Northern, all for immediate delivery. It is generally understood that the matter of contracts between foundrymen and the users of castings has been settled for the present, and all renewals of contracts are on practically that same basis as those expiring. The matters of labor, high rentals, taxes, &c., are giving local foundrymen some concern, as outside foundrymen are becoming more aggressive in bidding for work in the city and vicinity, with considerable success. As a consequence, a number of the best local contracts for castings will go to outside towns the coming year. As noted in last week's report, all furnaces in the Ironton District will be out of blast after to-day, and reports from the South show but one Woodward Furnace in blast, with possibly a little more curtailment on the part of other furnaces in that field still in blast, and which have been mentioned heretofore. Considerable comment was caused here by the publication of a telegram telling of a 200 per cent. advance in toll rate by the Kentucky & Indiana Bridge Company at Louisville, on Pig Iron shipped into Indiana from the Birmingham District, which might cause its diversion through this gateway. The following wire from a prominent railroad official in Louisville to *The Iron Age* representative is self-explanatory: "Present bridge rates and toll between Louisville and New Albany on Pig Iron are the same as have been in effect several years. The report referred to is entirely erroneous." For prompt shipment and for first quarter we quote f.o.b. Cincinnati, as follows, the rate from Birmingham being $3.25, and from the Hanging Rock District $1.20:

Southern Coke, No. 1	$16.75 to $17.25
Southern Coke, No. 2	16.25 to 16.75
Southern Coke, No. 3	15.75 to 16.25
Southern Coke, No. 4	15.25 to 15.75
Southern Coke, No. 1 Soft	16.75 to 17.25
Southern Coke, No. 2 Soft	16.25 to 16.75
Southern Coke, Gray Forge	14.25 to 14.75
Southern Coke, Mottled	13.75 to 14.25
Ohio Silvery, 8 per cent. Silicon	23.70 to 24.20
Lake Superior Coke, No. 1	18.20 to 18.70
Lake Superior Coke, No. 2	17.70 to 18.20
Lake Superior Coke, No. 3	17.20 to 17.70
Car Wheel Irons.	
Standard Southern Wheel	$25.75 to $26.25
Lake Superior Car Wheel	26.50 to 27.00

(*By Mail.*)

Coke.—Production is still being restricted. Some few contracts for the first quarter and half have been closed. Better grades of Foundry Coke are in fair demand, with prices about the same—namely, $2.75 to $3.25 at oven. Virginia Furnace grades range from $2 to $2.25 at oven.

Finished Iron and Steel.—The situation in finished lines seems considerably improved over last week. More business is going, though still confined to small lots and for local consumption. Manufacturers appear to be impressed with a feeling that the new year will bring about an increased demand for manufactured lines, that have for the past two months been inactive. Prices are unchanged, dealers quoting, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 1.85c., base, full extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.85c., base, full extras; Base Angles, carload lots, 1.75c.; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; Sheets, No. 16, carload lots, 2.20c.; small lots from store, 2.50c.; No. 14, carload lots, 2.10c.; small lots from store, 2.40c.; Steel Tire, 4-in. or heavier, carload lots, 1.95c., base; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.; Sheets, No. 10, 2c., carload lots; 2.30c. from store; Sheets, No. 12, 2.05c., carload lots; 2.35c. from store; Light Sheets, Black, No. 28, carload lots, 2.75c.; Galvanized, No. 28, 3.90c.

Old Material.—There is little to add to last week's report. Local dealers are convinced that the Scrap market will show little or no improvement before March or April. The railroads seem to be dumping an unusual amount of Scrap on the market, which brings exceptionally low prices. The following prices rule at the largest yards, and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton	$10.50 to $11.00
Cast Borings, net ton	3.50 to 4.50
Steel Turnings, net ton	5.00 to 6.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast and Wrought, net ton	7.00 to 8.00
Old Iron Axles, net ton	15.00 to 16.00
Old Iron Rails, gross ton	15.00 to 16.00
Old Steel Rails, long, gross ton	10.50 to 11.00
Relaying Rails, 56 lb. and up, gross ton	21.00 to 22.00
Old Car Wheels, gross ton	16.00 to 17.00
Low Phosphorus Scrap, gross ton	13.50 to 14.50

Birmingham.

BIRMINGHAM, ALA., December 21, 1907.

Pig Iron.—With the approach of the new year the attitude of awaiting developments becomes more general, and it may be said that both producers and consumers are resting on their oars, but a more cheerful tone is evident, and it is anticipated that market conditions will improve materially at an early date. Inquiries recently made as to 1908 requirements have resulted in some sales for delivery in the first quarter, but owing to the variation in quotations and the lack of evidence that bottom prices have been established, purchasers have apparently limited the tonnage engaged to requirements for orders actually booked, and as a result the aggregate tonnage sold is small. It is true that each transaction has apparently been considered a market within itself, but it is not believed that figures lower than $14 on a No. 2 Foundry basis, with a differential of 50c. per ton for lower grades, have been reached. The tonnage sold for prompt shipment is considerably under that of last week, and the indications are that many foundries will suspend operation, on account of the holidays, longer this time than usual; but it is to be noted that some plants now idle are being repaired, and in view of the general prediction that the cost of labor will have been materially reduced after the first of the year, conditions will no doubt be more favorable for operation, and an increase in the melt is expected. The fact remains, however, that new business of consequence is yet to develop with melters, and the anticipations are largely based on sentiment. During the week the furnaces of the Alabama Consolidated Coal & Iron Company at Gadsden and Ironaton, Ala., have been banked, which limits the production of Merchant Iron in the district to eight stacks, and it is reported that this number will be decreased by January 1, but the statement is not authentic. However, it is believed that furnaces recently banked will be in operation again in a short while.

Cast Iron Pipe.—In the past week several orders aggregating quite a tonnage have been placed with Southern concerns, and the outlook continues good. As indications favor a betterment of general conditions it is highly probable that additional capacity will be in operation early next year, although a material curtailment of production will no doubt result the coming week, in view of the fact that advantage is usually seized this season of the year for the taking of inventories, making repairs, &c., but it is believed that in each case the suspension will be temporary. We quote nominally as follows, per net ton, f.o.b. cars here: 4 to 6 in., $30; 8 to 12 in., $29; over 12 in., average $26, with $1 per ton extra for Gas Pipe.

Old Material.—Dealers anticipate that interest will revive early in the new year, but that prices will be on a lower basis, which seems inevitable in view of the decline in price of Pig Iron. The quotations on Cast Scrap are believed to have been maintained, but consumption has not increased and there is little demand at present. A definite statement as to quotations is not warranted and we quote nominally as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$22.00 to $22.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	17.00 to 17.50
Old Car Wheels	20.50 to 21.00
No. 1 Railroad Wrought	17.50 to 18.00
No. 2 Railroad Wrought	13.00 to 13.50
No. 1 Country Wrought	14.50 to 15.00
No. 2 Country Wrought	12.00 to 12.50
Wrought Pipe and Flues	13.50 to 14.00
Railroad Malleable	14.00 to 14.50
No. 1 Steel	13.50 to 14.00
No. 1 Machinery Cast	12.50 to 13.00
Stove Plate and Light Cast	8.75 to 9.25
Cast Borings	7.75 to 8.25

Pittsburgh.

PARK BUILDING, December 24, 1907.—(*By Telegraph.*)

Pig Iron.—Among inquiries in the market for Pig Iron for the first quarter of next year is one from an Eastern Steel works for 3000 tons of Chilled Bessemer for January delivery, on which we are advised that $19, Valley furnace, has been quoted, but the business has not yet been closed. On smaller lots of Bessemer for January and February some dealers are quoting as low as $18.50, at Valley furnace. There is not much inquiry for Foundry Iron, only small lots for spot shipment changing hands, and we do not hear of any inquiry for Forge Iron. We quote Bessemer Iron nominally at $19, Valley furnace, with some of the brokers quoting $18.50, on small lots. Basic Iron is very dull and as low as $17 to $17.50, Valley furnace, has been quoted. Northern No. 2 Foundry Iron for prompt shipment is quoted at $17 to $17.50, Valley furnace, but there would be no trouble in buying Iron at the lower price. We quote Northern Forge nominally at $17, Valley furnace, or $17.90, Pittsburgh.

Steel.—On December 20 the Carnegie Steel Company notified its customers who make quarterly contracts that the price of Sheet and Tin Bars in long lengths for the quarter commencing January 1 would be $29, Pittsburgh, which is a reduction of $2 a ton on the price charged for this quarter. There is some inquiry for Steel for next year, but very little tonnage is being sold. We quote Bessemer and Open Hearth Billets nominally at $28, and Sheet and Tin Bars at $29, Pittsburgh. Forging Billets are nominally $30, Pittsburgh, but on a large contract for desirable tonnage this price might be shaded. The American Sheet & Tin Plate Company has posted notices at all its nonunion Sheet and Tin Plate mills that there will be no change in the scale of wages for the present. Such notices are not necessary at its union Sheet and Tin Plate mills, which are governed by the Amalgamated scales.

(*By Mail.*)

Signs appear that the worst has been reached and that there will be some betterment in general conditions early in the new year. The supply of currency by the banks is better, and last week a number of concerns that have been paying their men for two months or more in clearing house checks to the extent of 80 per cent., and 20 per cent. in cash, paid their men on an all cash basis. Collections are said to be a little better, but are still far from being satisfactory. There is more inquiry for Pig Iron and Steel, and it is expected that early in the new year a large tonnage in Rails will be placed. The shutting down movement among the blast furnaces is still going on, and last week, out of 19 merchant furnaces in the two valleys that sell their product in the open market, 11 stacks were in and 8 out. The number of idle stacks will be further increased by the blowing out of one more Shenango furnace at Sharpsville, one stack of M. A. Hanna & Co., which is scheduled to go out December 27; one Brier Hill about January 1, and Sharpsville Furnace at Sharpsville, early in January. It is likely that by January 10 there will be only five merchant furnaces in the two valleys making Iron. The Shenango Works of the Carnegie Steel Company has been shut down for inventory and repairs, but is expected to start again about January 1. The entire Homestead Steel Works closed on Tuesday, December 24, at 6 p.m. The Open Hearth department will resume Thursday, December 26, at 6 a.m., the Plate and Slabbing mills on Thursday night at 6 p.m., while the Sheet and Blooming mills and the Howard Axle Works will resume Sunday, December 29, at 6 p.m. This is the official schedule and does not indicate that the entire Homestead Steel Works will be closed during January, as reported. A meeting of the independent Sheet and Tin Plate manufacturers was held in the Hotel Lincoln, this city, on Friday, December 20, at which they agreed to sustain prices and to close down their mills as much as may be necessary to keep stocks from accumulating. With the enormous reduction in output that has taken place in Pig Iron, Steel and Finished

Material, there is no doubt that the situation is much better than it would have been had not this policy been followed.

Ferromanganese.—We do not hear of any sales, but some Ferro is being offered for resale at relatively low prices. We quote 80 per cent. English Ferro at $50 to $51, Pittsburgh.

Muck Bar.—Most of the mills that use Muck Bar are closed. We quote best grades of Muck Bar, made from all Pig Iron, at nominally $31, Pittsburgh. If any new business was offering, probably a lower price would be named.

Steel Rails.—It is believed that in the next two weeks, or certainly early in January, there will be some Rail tonnage placed, the Pennsylvania, Baltimore & Ohio, Norfolk & Western and Chesapeake & Ohio being reported as about ready to place their contracts. The Edgar Thomson Rail mill will close this week, but is scheduled to start again soon after January 1. The demand for Light Rails holds up remarkably well, the Carnegie Steel Company having taken about 1300 tons in the past week. Prices on Light Rails, which are cut about $2 a ton or more by the mills rerolling Rails, are as follows: 25 to 45 lb., $30; 20-lb., $31; 16-lb., $32; 12-lb., $34; 10-lb., $36, and 8-lb., $40. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Wire Rods.—The market is quiet. We quote Bessemer and Open Hearth Rods nominally at about $34, Pittsburgh.

Plates.—Specifications against contracts are coming in fairly well, and local mills have about enough tonnage on their books to run them through January, if it is taken out. It is believed that early in the year some business that has been pending for some time will be placed. New orders are few and only for small lots for prompt shipment. The market on Plates is fairly strong, but some mills occasionally shade prices not over $2 a ton. We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest and being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell grade of steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—No local tonnage of any moment has been placed in the past week, and December will close with the record of being the quietest month in the Structural trade for three or four years. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—At the meeting of independent Sheet mills above referred to, the manufacturers agreed on a plan of restricting output, and also stated that prices, which heretofore had been shaded not over $2 a ton on Black and Galvanized Sheets, would in the future be absolutely maintained. The report therefore of an official reduction of about $2 a ton on Sheets to be made on January 1 is untrue. Prices are as follows. Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.: Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 2 gauge Painted Roofing Sheets at $1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, $3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Tin Plate.—Some fairly large inquiries for Bright and Roofing Plates are in the market for delivery in the first quarter. At the meeting of the independent Tin Plate mills mentioned above the manufacturers agreed that prices should be strictly maintained, and that the output should be curtailed to meet the actual demand and prevent accumulation of stocks. We quote, $3.90 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days.

Iron and Steel Bars.—New tonnage in both Iron and Steel Bars is light, and specifications against contracts do not represent more than 25 to 30 per cent. capacity of the mills. We quote both Steel and Iron Bars at 1.60c., Pittsburgh, either for delivery in the Pittsburgh District or for Western shipment.

Spelter.—Another break has occurred in prices, which have gone very much lower than anticipated either by smelters or consumers when the decline started. Last week prime grades of Western Spelter were offered at 4c., St. Louis, equal to 4.12½c., Pittsburgh, but even this low price did not result in any new business. It may be stated that Spelter has not been as low as 4c. a pound since 1898, prices in July of that year having gone to 3.95c., St. Louis.

Hoops and Bands.—Practically all consumers are covered by contracts placed some time ago, on which specifications are coming in at a fairly satisfactory rate, but very little new tonnage is being placed. We quote Steel Hoops 2c., and Bands for all purposes at 1.60c., base, half extras as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

Spikes.—Business is exceedingly dull, and several of the larger concerns making Spikes are short of orders and are running their works to half time or less. It is believed that soon after the first of the year there will be something doing in Railroad Spikes, several of the railroads being about ready to place contracts. We quote Railroad Spikes at $1.90 to $1.95 and smaller sizes at $2.05 to $2.10 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—Specifications against contracts are light, and practically no new orders are being placed. A number of the mills will close this week for the holiday season and to make repairs, and some of them will probably not start up until January 15 or later. A good deal of tonnage on contracts is held up, but as soon as money conditions improve it is believed a good part of this will come out. The demand for Shafting is also quiet. Prices are rather weak, except on Shafting, and we quote nominally as follows: Cold Rolled Shafting at 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory; Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—The character of the few orders being placed in Tubular goods indicates strongly that stocks held by jobbers are at a low ebb, and it is believed for this reason, and also because of better money conditions business will show a substantial increase after January 1. Reports of a proposed reduction of two or three points in prices of Pipe on January 1 are officially stated to be untrue, as neither the National Tube Company nor any of the independent Pipe mills contemplate any reduction in prices at present. It is realized that even a material cut in prices would not result in any more orders being placed under present conditions. Prices on Steel Pipe are firm, but on Iron Pipe are shaded. The net discount on Steel Pipe to the large trade on ¾ to 6 in. is 74 and 5 per cent. off list, while on Iron Pipe ¾ to 2 in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel. Black. %	Galv. %
⅛ to ¼ in.	65	49
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—New business is from hand to mouth, being only for small lots and prompt shipment. A large tonnage in Railroad Tubes is held up, none of the railroads having been specifying freely against contracts for some time. Prices on Railroad Tubes are somewhat demoralized, but on Merchant Tubes are fairly firm, discounts on the latter being as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 3 in.	52	65
6 to 13 in.	42	59

2¼ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—The market is lifeless, and will no doubt remain in this condition until after January 1.

Many of the finishing mills that are not already idle will close down this week for the holidays and to make repairs, and will not start up again until after January 1, and possibly some of the mills not until later in the month. For this reason, any immediate improvement in demand for Scrap is not expected. It is realized that prices of Scrap are lower than they should have gone, but under present conditions consumers will not take any Old Material at any price. Dealers quote nominally as follows: Heavy Steel Scrap, for Pittsburgh, Steubenville or Sharon delivery, $12.50 to $13; Cast Iron Borings, $6 to $6.50; No. 1 Cast Scrap, $14.50 to $15; Bundled Sheet Scrap, $9 to $9.50; Low Phosphorus Melting Stock, $16; Rerolling Rails, $12.50 to $13; No. 1 Busheling Scrap, $12.50 to $13; No. 2, $9.50 to $10; Old Steel Rails, short pieces, for Open Hearth use, $12.50 to $13; Steel Axles, $17.50 to $18; Standard Sheet Bar Crop Ends, $15 to $15.50; Iron Axles, $22.50 to $23; Grate Bars, $11.50 to $12; Stove Plate, $10.50 to $11. All these prices are per gross ton, f.o.b. Pittsburgh, unless otherwise noted. If any tonnage of moment was wanted by consumers, it is probable that some dealers would shade these prices.

Coke.—While three or four of the furnace companies have inquiries in the market for their supply of Furnace Coke for the first half of next year, nothing has been done. As low as $2.25 has been quoted on contracts for genuine Connellsville Furnace Coke for first half, and it is probable that on desirable business for that period $2.15 might be done. It is officially stated that the H. C. Frick Coke Company will not make any reduction in wages of Coke workers on January 1, as reported, but it is possible that some of the smaller Coke operators may make reductions, although this has not been fully decided. The output of Coke is growing less each week, the Upper and Lower Connellsville regions having made last week less than 150,000 tons, the smallest output in any one week in these two regions for some years. Of the 35,547 ovens in the two Connellsville regions, 14,973 were active last week and 20,574 were idle. The number of idle ovens will be materially increased at the close of the year, as it is understood that a number of makers of Coke are getting ready to shut down, having no orders on their books.

Metal Market.

NEW YORK, December 24, 1907.

Pig Tin.—The decline on the London Exchange was arrested on Wednesday of last week and since then the trend has been upward. About that time the heavy selling by the Far Eastern interests, which had depressed the London market, ceased, and when this pressure was removed the prices slowly advanced. It is difficult to obtain satisfactory and authentic information regarding the operations of these Chinese interests, but it is generally understood that out of 6000 tons carried they were forced to dispose of about 2000 tons. Whether this lightened their load so that they will be able to finance the rest of it is a matter for conjecture, but this is one version given. Another is that London bankers have assisted them, though this seems rather improbable, while a third version is that they have only stopped selling for the time being, and as soon as the market advances slightly will resume liquidation. There has been little or no buying by consumers for future delivery, and many of them are expecting lower prices. Business during the week has been dull, probably with a smaller turnover than in the previous week. The deliveries into consumption during December are not expected to exceed 1200 tons. The price range for the week has been as follows:

	Cents.
December 19	26.70
December 20	27.00
December 21	27.10
December 23	27.45 to 27.55
December 24	27.00 to 27.10

Arrivals continue small, only 909 tons arriving at Atlantic ports this month, and there are afloat for the United States 865 tons. The London market closes to-day at £120 15s. for spot and £122 for futures, and will be closed until Friday.

Copper.—The buying of Copper under 13c. by strong hands, who put it away until it could be sold for more money, stimulated the market to such an extent that the price was forced up rapidly. Some sales of Electrolytic were made on a basis of 13.62½c., but the general market would probably be better represented by the range of 13.37½c. to 13.62½c. Lake Copper can be had at 13.50c. to 13.75c., and Casting Grades are nominally quoted around 13.25c. Some sales by the Calumet & Hecla have been made at around 14c. Business for European shipment has been light, as practically all the business now coming from European melters is being done by foreign agents of the larger producers or selling companies, as they have very large stocks on the Continent. Coupled with the speculative buying has been considerably more interest manifested by Brass manufacturers in the Naugatuck Valley, who have, it is true, bought sparingly, but have made considerable inquiry regarding the future position of the metal, and it is evident that they are sounding the market preparatory to making some further commitments early in the year. This, of course, will not be anything like the scale of a year ago. There is also considerable business under the surface in the Wire trade, but this cannot be expected to get out until financial conditions improve materially. The London market closes to-day at £60 10s. for spot and £61 15s. for futures, while Best Selected is held at £64. The exports during December will again constitute a new high record, as for the first 23 days of the month they have amounted to 27,033 tons.

Pig Lead.—Prices declined further last week, and sales were made at 3.40c., New York. On Friday afternoon, however, considerable animation developed in the market, and there was heavy buying both by consumers and dealers. It is estimated that at least 1000 tons were sold on that afternoon alone. The price ran up quickly, and as high as 3.60c., New York, was paid before the end of the week. Saturday it was practically impossible to obtain refusals of quotations. Further inquiry on Monday strengthened the market, and some business was done on a basis of 3.50c., St. Louis. Considerable Lead has passed into strong hands, and the market is much firmer than for weeks.

Spelter.—Spelter, although somewhat higher than a week ago, has not moved up with the rapidity of Lead. On Friday sales were made on a basis of 4.25c., New York, but to-day 4.30c. to 4.35c. would be demanded for prime Western brands. A sale of a special brand was made last week at around these figures.

Ferroalloys.—The range of $44 to $46 quoted for Ferromanganese in this market last week represented the price of small resale lots and was somewhat below the market at that time for actual business on importation. The market is dull and the price is now nominal, at $48 to $49, Baltimore. Dullness likewise prevails in the market for 50 per cent. Ferrosilicon. Domestic can be had at $90, but imported rules higher.

Antimony.—There is but little activity in this metal and prices are largely nominal. Hallett's can be imported at 8.50c. and Cookson's at about 9c.

Nickel.—Prices are without change, at 45c. for large lots and 55c. to 60c. for small quantities.

Tin Plates.—The market is without change, at $3.90, Pittsburgh, and $4.09, New York. A further decline is noted in Welsh Plates. These have declined about 2s. since June.

Old Metals.—There is very little inquiry in the market and almost no business. Quotations are but little changed from two weeks ago. Dealers' selling prices for large lots are as follows:

	Cents.
Copper, Heavy Cut and Crucible	13.00 to 13.25
Copper, Heavy and Wire	12.50 to 13.00
Copper, Light and Bottoms	11.50 to 11.75
Brass, Heavy	10.00 to 10.50
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.00 to 12.50
Clean Brass Turnings	8.50 to 8.75
Composition Turnings	10.50 to 11.00
Lead, Heavy	4.00
Lead, Tea	3.75
Zinc Scrap	3.75

New York.

NEW YORK, December 24, 1907.

Pig Iron.—There has been more inquiry, and some fair business, including one lot of about 1200 tons of Foundry Iron, with other larger business pending. Southern furnace interests are figuring more actively in this market, but since much of the business is being done on a hand to mouth basis, the matter of deliveries is a handicap. We quote $18.50 to $19 for No. 1 Foundry, $17.50 to $18.25 for No. 2 Foundry, and $17 to $17.25 for No. 2 Plain. Alabama Irons are quoted $18.50 to $19 for No. 1 Foundry and $17.50 to $18 for No. 2 Foundry.

Bars.—The condition of the Bar Iron trade is indicated by the result of a meeting of the Eastern Bar Iron manufacturers held in this city December 19. At this meeting practically all of the Bar mills east of the Allegheny Mountains were represented, and it is said that it was the largest meeting of this trade ever held. After discussing conditions and prospects, it was unanimously decided to close all mills for at least two weeks. Some of the manufacturers present stated that they would not resume operations before January 20. It is likely that very little Bar Iron will thus be turned out by the Eastern mills until pretty well along in the month of January. Prices are unchanged, at 1.60c., Pittsburgh, or 1.76c., tidewater, on either Iron or Steel Bars.

Plates.—Current business is light and nothing of any importance is in view for the next week or two. A large quantity of Plates will evidently be needed for the new refining works of the Standard Oil Company on Staten Island and also for a projected line of water pipe in New Jersey, but these matters are not expected to be closed soon. Prices are continued as follows for tidewater delivery: Sheared

Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.: Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Steel Rails.—While there is believed to be a good volume of Rail requirements ahead of the mills, little disposition to contract is apparent under present conditions. The reported sale of 10,000 tons of Open Hearth Rails to the Philadelphia & Reading is not officially confirmed as yet. While the new specifications for Bessemer Rails, the main features of which were given in these columns, have not the formal approval of the American Railway Association, they embody the results of the repeated conferences of Rail mill and railroad engineers and are calculated to meet the suggestions of the railroads in a number of respects. Somewhat lower carbons on the heavier sections represent a return to former practice and mean that something of resistance to wear has been given up for increased immunity from breakages. There is an evident change in sentiment on the subject of discard, and railroad representatives are less sure that a high fixed percentage of crop is the proper solution of this problem. The Rail companies believe that a 9 per cent. crop is sufficient to remove slag and to prevent danger from pipes. In adding to the $28 price a charge of 29c. for each additional 1 per cent. of crop above 9 per cent., it is figured that merely the cost of the additional discard will be covered.

Structural Material.—Not only is comparatively little Structural business coming on the books, but very little is being done in estimating. The largest job of the week, 4,500 tons for Philadelphia & Reading elevated tracks at Ninth and Green streets, Philadelphia, was awarded to the McClintic-Marshall Construction Company, Pittsburgh. On this contract the variation between the lowest and the highest bids is reported to have been about $6 a ton. While there is some figuring on railroad requirements, the disposition is to put over bridge building plans for 1908, evidently to await financial developments. The American Bridge Company's output for 1907 promises to be about 650,000 tons, as against 577,000 tons in 1906, and its sales for the year are expected to reach a total somewhat over 475,000 tons. The business booked by the company this month will probably amount to 25,000 tons, including 12,000 tons for Gary, Ind. We continue to quote Structural Material, mill shipments, f.o.b. at tidewater, as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Cast Iron Pipe.—The Baltimore contract for 3500 tons of Water Pipe was placed last week with the leading interest. The price named was $25 to $25.50, according to size. The competition for this business was quite sharp, and the bids of some of the other manufacturers were not far from those made by the successful company. General business continues light, but more confidence is observed among Pipe makers regarding the volume of business which is expected to come out next year. Prices will be closer to views of those consumers who refrained from buying the past year, and municipalities will be able to sell bonds more freely. Carload lots of 6 in. are quoted at $30 per net ton, at tidewater, but larger lots can, of course, be placed at much lower figures.

Old Material.—Even the weather is against the Scrap market. The winter is so open that railroad companies are enabled to make repairs of tracks and gather Old Material as freely as in the summer months. Consequently, the quantity of Scrap offered from this direction continues heavy. Such sales as are being made are at continued low prices. Considerable quantities of Rerolling Rails are understood to have been sold at $11, delivered. A sale of 600 tons of good Wrought Scrap was made at $9.50, delivered at the buyers' mill on a freight rate of about $1. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting	$8.50 to $9.00
Heavy Melting Steel Scrap	8.50 to 9.00
Old Steel Rails, rerolling lengths	10.00 to 11.00
Relaying Rails	16.00 to 17.00
Old Iron Rails	14.00 to 14.50
Standard Hammered Iron Car Axles	17.00 to 18.00
Old Steel Car Axles	14.00 to 14.50
No. 1 Railroad Wrought	10.50 to 11.50
Iron Track Scrap	9.50 to 10.00
No. 1 Yard Wrought, long	10.00 to 10.50
No. 1 Yard Wrought, short	9.50 to 10.00
Light Iron	4.50 to 5.50
Cast Borings	4.50 to 5.00
Wrought Turnings	6.00 to 6.50
Wrought Pipe	8.00 to 8.50
Old Car Wheels	15.00 to 15.50
No. 1 Heavy Cast, broken up	12.00 to 12.50
Stove Plate	11.00 to 11.50
Grate Bars	8.50 to 9.00
Malleable Cast	11.00 to 11.50

While the details of the new sales organization of the Tennessee Coal, Iron & Railroad Company have not yet been perfected, Frank A. Burr will be general sales agent, with headquarters at Birmingham, Ala. The local representatives in the different cities will be in the hands of the respective agents of the Carnegie Steel Company and of the Illinois Steel Company.

Iron and Industrial Stocks.

NEW YORK, December 24, 1907.

Transactions in the stock market have been in limited volume during the week. On the one hand, liquidation appears to have practically ceased, while on the other hand those inclined to purchase in the expectation of higher prices have not yet found money sufficiently easy to warrant such an undertaking on a large scale. Fluctuations have therefore been only moderate. The range of prices on active stocks from Thursday of last week to Monday of this week was as follows: United States Steel common 25¾ to 27⅛, preferred 87⅛ to 88⅝; Car & Foundry common 29⅞ to 31¼, preferred 90⅛; Locomotive common 35¾ to 38, preferred 88; Steel Foundries common 6¾, preferred 28 to 28½; Colorado Fuel 18⅝ to 19½; Pressed Steel common 18½ to 20½, preferred 65 to 66⅛; Republic common 16½ to 17, preferred 65 to 66; Sloss-Sheffield common 36½; Cast Iron Pipe common 20, preferred 55⅛; Can common 4, preferred 40 to 40⅜. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 25½, preferred 87, bonds 84; Car & Foundry common 29⅝, preferred 90⅛; Locomotive common 34¾, preferred 87; Colorado Fuel 18½; Pressed Steel common 19½, preferred 67; Railway Spring common 26½; Republic common 16⅝, preferred 66; Sloss-Sheffield common 36½; Cast Iron Pipe common 21, preferred 55⅛; Can common 4, preferred 40.

The statement of the Crucible Steel Company of America for the quarter ended November 30, 1907, is as follows:

Earnings, after deducting all expenditures for repairs, interest, &c.	$193,524.31
Deduct amount set aside as reserve for contingencies	5,836.01
Net profits	$187,688.30
Dividend No. 21, declared December 10, 1 per cent. on preferred stock	244,365.00
Deficit for the quarter	$56,676.70

The above statement of earnings is based on inventory values of finished material as of August 31, 1907. The deficit for the quarter is brought about entirely through the shrinkage in present market values:

Surplus on November 30, 1907, was	$2,400,607.11
Surplus on November 30, 1906, was	1,541,188.74
Showing an increase at the end of the present quarter of	$859,418.37

Dividends.—The American Locomotive Company has declared a quartely dividend of 1¾ per cent. on the preferred stock, payable January 4.

The National Fire Proofing Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable January 15.

The Standard Coupler Company has declared the regular semiannual dividend of 4 per cent. on the preferred and 2 per cent. on the common stock.

The Electric Boat Company has declared the regular quarterly dividend of 2 per cent. on the preferred stock, payable January 2.

The American Screw Company has declared a quarterly dividend of 1¾ per cent., payable December 31.

The Illinois Steel Company's Works Shut Down.

CHICAGO, December 24, 1907.—*(By Telegraph.)*—Practically all finished departments except the rail mill in the South Works of the Illinois Steel Company shut down to-day and will remain closed until after the holidays.

The Lackawanna Steel Company's open hearth steel plant has made another world's record. The No. 9 furnace, recently gone out for repairs, made 31,674 gross tons of ingots on its last run without 1 cent spent for repairs, beyond the usual replacement of doors and bulkheads. No. 10 has already made 30,283 tons, and No. 11 28,632 tons on this run, and both are still working.

The Goshen Iron Company is blowing out its Victoria Furnace at Goshen, Va. The furnace is being blown out because there has been some indication of trouble with the lining and the company thought it best because of the present stagnant condition of the iron trade to make repairs and await the return of better conditions before resuming operations.

American Factories in Europe.

Robert Goldmann of Vienna, Austria, a machinist and engineer, has been a greatly interested visitor in the Cincinnati manufacturing district for a month or so. He has been most courteously received and entertained by the officials and members of both the Cincinnati and the National Metal Trades associations, headquarters of which are located in that city. To the representative of *The Iron Age* in Cincinnati, Mr. Goldmann said:

"Through the courtesy of Mr. Manley of the Cincinnati Metal Trades Association and the cleverness of the machinery men of the Queen City I have a splendid insight into the methods of American manufacturing concerns. These gentlemen have opened my eyes to facts that to me are little less than amazing. Our country already regards your community as one of the greatest and most important machinery exporting centers of the United States, and of this I was well informed ere I came, but to become impressed with your remarkable development and growth, it was necessary for me to be brought into direct contact with your officials, your workmen, your sales centers. You may be sure this wonderful development is regarded with the greatest concern and no little jealousy by the European tool making centers. With the knowledge I have gained I cannot but be amazed that the American manufacturer restricts himself to the exporting of his machines to Europe. Why does he not build branch establishments in Europe, in the Consular headquarters at least? How much more economically could his product be marketed with us if turned out of shops built and managed under the American rule and discipline? The average wage of your American workman, I learn, is $13.50 per week. In the old country we do not pay one-half such salaries.

"Take the matter of freights. For example, on a machine with a volume of approximately 40 cu. ft. you pay to one of the middle European points approximately $22 freight, with duty of about $20. You also have heavy agency commissions to pay. If your tools were made right on the ground, you could save all these items. Besides, your factory would be figuratively at your patron's door, and machines could be delivered in a fraction of the time now consumed. Some make the objection that the European workman is not so competent. I am sure the comparison which gives the European workman the worst of it is made without a knowledge of our possibilities or the wide difference in circumstances. The chief reason for your acknowledged general superiority lies in your well known principle of specializing and the concentration of these plants in certain communities. Your workmen may also be a shade quicker in action than ours. Your greatest advantage, mechanically speaking, is seen in the modern and first class equipment of your establishments. Naturally, also, you use only American machine tools, which we gracefully acknowledge are superior to ours; else, why their great sale and use in the best European establishments?

"The European manufacturer uses his machines 10 to 20 years. The life, or rather the use, of an American machine in your establishments is about five years. You are so constantly making improvements and adding time and labor saving devices. Then there is with you that feeling of mutual forbearance and the thought that one is essential to the other, which is lacking in a great measure in Europe. The boss of the American workman gets closer to the hearts of his men and is more one of them. He pays his workmen the respect that is due them—not to overlook the better wages. The salary enables your workman to live more as a human being; to raise his children and educate them in the same schools as the children of his employer.

"Your manufacturer with branches on our side of the water could pay his workmen the salary they earn, which would be higher than they now get in the same line, and still be getting the work at a cost less than the same work would cost at the parent establishment. It is not so expensive to live in Europe as here.

"Take the officemen, draftsmen and engineers. It is the same with these classes. Educated in the European high schools, they leave at about 24 years of age, must go to work in the shops as volunteers without pay several months, sometimes a year or more; then during the first year of service on the payroll they receive a pittance of $12 to $20 per month. Pay your engineers $20 instead of $12 to start, and $30 instead of $20; it is easily done, and you have superior service in Europe that costs you three and four times as much in America, and yet places you in the lead of European manufacturers, with possibilities that they (the Europeans) cannot aspire to. What a chance for your progressive tool manufacturers who now compete successfully with our European toolmaker, notwithstanding heavy freights, big duties, agents' commissions, &c., on your side, and the lower salaries and other advantages I have named from the European viewpoint. What could prevent immense success, if you would build in our midst and market the machines you now sell there at such expense to yourselves?

"In this connection I want to direct your attention especially to Austria, my country. We are just now emerging from a grave danger, and entering upon a great business revival brought about by assurances that we shall not be separated commercially from Hungary, which was threatened for several years. You might state a fact that is frequently overlooked by Americans, and that is, while certain branches of the mechanical arts and industries are quite up to the world's best standards, other branches, such as tool manufacturing, are sadly behind the times, and we are obliged to get a great part of such supplies from outside. We therefore solicit your better acquaintance commercially, for we recognize your absolute superiority in the things I have named.

"The condition which suggested to the German manufacturer of great turbines, the company, by the way, that built the main portions of the big power house at Niagara Falls, that it was a profitable idea to build a branch establishment in Austria, strengthens my argument on the branch tool making plants in the same country. This concern has been very successful with its Austrian branch. How much more so would be your American concerns which have already the trade established on an article that costs twice as much to lay it down at point of destination as if built right on the ground? Austria is a country very rich in coal and iron. We have healthy, able and efficient workmen. Our (Austrian) Secretary of the Treasury is very much interested in the industrial development of our country, and would welcome proper expansion and development. I think American manufacturers can do no better than investigate this country of mine along the lines I have suggested."

The War Department Advertises for an Airship.—Specifications were issued at Washington, D. C., December 23, by General Allen, chief signal officer, War Department, upon which inventors are invited to submit bids for an airship, to be opened February 1. This machine must carry two persons of the combined weight of 350 lb., and sufficient fuel for a flight of 125 miles. It must be designed for a speed of at least 40 miles an hour, but a machine will be accepted capable of only 36 miles an hour, although only 60 per cent. of the contract price will be paid therefor. Likewise, there is provision for a premium on speed in excess of 40 miles an hour, so that at 44 miles the machine would cost the Government 120 per cent. of the contract price. The hardest requirement to meet and one never heretofore realized by any inventor is that "before acceptance, a trial endurance flight will be required of at least one hour, during which time the flying machine must remain continuously in the air without landing." Bidders will be required to furnish with their proposal a certified check to the amount of 10 per cent. of the cost of the machine.

The *Selling Magazine* for November contained an extremely interesting article entitled "Exploiting the Application of a Machine," by Walter B. Snow, publicity engineer, 170 Summer street, Boston, Mass. In this article Mr. Snow gave a description of the method which he followed in conducting an advertising campaign for the B. F. Sturtevant Company, during which he evolved a number of novel ideas which were found highly effective.

The Economic Waste of Accidents.

A friend of the American Museum of Safety Devices and Industrial Hygiene has offered a prize of $100 for the best essay on the Economic Waste of Accidents. The committee of award consists of Richard Watson Gilder, George Gilmour and W. H. Tolman. Prof. F. R. Hutton, past president of the American Society of Mechanical Engineers, is the chairman of the Committee on Admission of Exhibits for the American Museum of Safety Devices and Industrial Hygiene, which occupies the entire fifth floor at 231 West Thirty-ninth street, New York.

The museum desires exhibits of devices and processes for safeguarding life and limb in connection with woodworking machinery, railroad and marine transportation, mining and agriculture, manufacturing of all kinds. One exhibit already consists of specimens of 50 different kinds of dusts illustrating the occupational diseases. Accompanying each is a photograph of a microscopic section of the lungs, showing the effect on the worker of coal, iron, brass, steel, wood and other dusts. There are also wax models of lungs and hands illustrating those occupational diseases which attack the bones and skin. All exhibits accepted by the Committee on Exhibits will be eligible for the gold medal offered by the *Scientific American* for the best device, exhibited at the museum, for safeguarding life and limb. All inquiries regarding exhibits should be sent to Dr. W. H. Tolman, director, 231 West Thirty-ninth street, New York.

Gold and Silver Production in 1906.

R. E. Preston, acting director of the Mint, Washington, D. C., has issued a statement showing the final estimate and approximate distribution by producing States and Territories of the product of gold and silver in the United States during the calendar year 1906, prepared by the Bureau of the Mint, under the direction of George E. Roberts, who resigned August 1 as Director of the Mint, acting in concert with the United States Geological Survey. The figures were arrived at by the two offices after thorough investigation and research, and are as given in the table above.

Approximate Distribution by Producing States and Territories of the Product of Gold and Silver in the United States for the Calendar Year 1906.

State or Territory.	Gold. Fine ounces.	Gold. Value.	Silver. Fine ounces.	Silver. Commercial value.	Total value (silver at commercial value).
Alabama	1,137	$23,500	100	$68	$23,568
Alaska	1,033,537	21,365,100	203,500	137,747	21,502,847
Arizona	132,891	2,747,100	2,969,200	2,009,822	4,756,922
California	911,041	18,832,960	1,517,500	1,027,180	19,860,080
Colorado	1,109,452	22,934,400	12,447,400	8,425,520	31,359,920
Georgia	1,146	23,700	300	203	23,903
Idaho	50,102	1,035,700	8,836,200	5,981,135	7,016,835
Michigan	.....	.....	186,100	125,969	125,969
Missouri	.....	.....	31,300	21,187	21,187
Montana	218,752	4,522,000	12,540,300	8,488,404	13,010,404
Nevada	448,852	9,278,600	5,207,600	3,524,972	12,803,572
New Mexico	12,877	266,200	453,400	306,902	573,102
North Carolina	4,397	90,900	24,700	16,719	107,619
Oregon	63,860	1,320,100	90,700	61,394	1,381,494
South Carolina	3,609	74,600	100	68	74,668
South Dakota	319,512	6,604,900	155,200	105,053	6,709,953
Tennessee	39	800	25,600	17,328	18,128
Texas	164	3,400	277,400	187,769	191,169
Utah	248,208	5,130,900	11,508,000	7,789,650	12,920,550
Virginia	498	10,300	100	68	10,368
Washington	4,983	103,000	42,100	28,497	131,497
Wyoming	276	5,700	1,100	745	6,445
Totals	4,565,333	$94,373,800	56,517,900	$38,256,400	$132,630,200

The coal operators and representatives of the United Mine Workers of the central competitive field, comprising Ohio, Indiana, Illinois and western Pennsylvania, met in conference at Indianapolis, Ind., last week to endeavor to restore the interstate wage agreement, such as existed until abandoned two years ago, but adjourned Saturday without having come to an agreement. They will meet again in the same city January 30 to continue the negotiations. That date will be immediately after the close of the biennial national convention of the United Mine Workers in Indianapolis. In the last two years the wage scale has been fixed by States and districts, and it is said to be the general desire of both sides to return to the former method of a joint convention and interstate wage agreement.

The members of the Northwestern Cement Products Association held their annual convention at the Coliseum, Chicago, on December 17 to 20, inclusive. The meetings, which were held in the Coliseum Annex, were well attended, and a number of interesting addresses were given and papers read upon various phases of the cement industry. In connection with the convention there was held by the Cement Products Exhibition Company its first annual show, which occupied the entire floor of the Coliseum proper. These exhibits included displays of cement, cement products and cement making machinery.

The Swedish Iron & Steel Corporation was incorporated under the statutes of New York December 20, with a capital stock of $450,000, fully paid in. Although the permanent organization has not yet been effected, the incorporators are Harry S. Stallknecht, John H. Brewster and John F. Valieant. The new company will make a business of handling Swedish steel and steel products only, and its headquarters will be at 16 Exchange place, New York.

Exports of merchandise from the United States in November reached the stupendous total of $204,444,860, while the imports were only $110,789,109. The excess of exports was thus $93,655,751. This is the finest showing ever made for our foreign trade in the month of November. The exports of November, 1906, were $22,000,000 less, while the imports were $9,000,000 more than in the month of November this year. The falling off in imports is a direct result of the stringency in the domestic money market, which has necessarily curtailed our purchases in foreign markets. On the other hand, we have had an abundance of foodstuffs available to meet the heavy foreign demand.

A. P. Witteman & Co., Philadelphia, Pa., have removed their Boston office from the Mason Building, 70 Kilby street, to a commodious space in the Machinery Exchange, 10 Oliver street. They are selling agents for the Burgess high speed and tool steel manufactured by the Cyclops Steel Works, steel castings made by the Chester Steel Castings Company, and finished forgings produced by the Chester Forging & Engineering Company.

The Machinery Trade.

NEW YORK, December 24, 1907.

Quite a little new business developed the past week, and though the demand continues rather light, it is apparently better than it has been for some weeks. A great deal of the new business came from the larger interests, which are showing a tendency to come into the market more freely. It will be remembered that two fair sized lists of tools were reported in these columns since the heavy purchase of the New York Central Railroad. One of these is to be closed this week. Another list, covering a round lot of machine tools, has been received in the trade, and the smaller inquiries have increased in number. Together they figure up a substantial amount of machinery upon which houses are figuring. The improvement in business, though slight, has created a much better feeling in the trade, and, coming as it did at the close of the year when not much business is expected to develop, it has restored confidence to a considerable degree. Merchants are talking much more hopefully of the outlook for business the first of the year.

Dealers in machinery supplies and small equipment, who keep in touch with the demand in this vicinity, state that after the first of the year they expect some good business because of the fact that many manufacturers are now overhauling their shops and taking stock, and in consequence will find there is much in the way of small purchases that they will need. It is noticed that during the first two months of the new year the supply business is especially good, and when it is taken into consideration that until now many manufacturers have been too busy to overhaul their equipment a good business can be looked for. This will also apply to purchases of machinery parts. As a good deal of the machinery has been kept in almost constant operation for a year or more, many manufacturers will find that a good deal of repair work on their equipment will be necessary.

There has been a decided falling off in the demand for power equipment in the last few weeks, which is largely due to the postponing of many enterprises until after the new year. An engine man who is familiar with conditions in this territory, however, states that there are many large interests near the Manhattan District that are using more or less worn out or obsolete power equipment in preference to spending any money in that line just now. With the coming of the new year it is expected that trade in power equipment will pick up, as many parties are waiting to charge their purchases to next year's business.

An encouraging sign of confidence in the soundness of business and the early return of a more active demand is the disposition on the part of both manufacturers and dealers to maintain prices. Although the demand has fallen off considerably there has practically been no price cutting. It is said that many are refraining from making purchases with the expectation of getting tools cheaper, but it looks as if they will be disappointed. Manufacturers are coming to a closer understanding with one another, and are apparently further away than ever from making a reduction in prices. It is argued that there is only a certain number of orders to be placed and that no advantage can be obtained in making lower prices. In the endeavor to maintain prices manufacturers of various classes of tools have conferred with one another, and only recently the co-operation of the dealers was secured. Last week a meeting of an important branch of the machine tool trade was held in New York which was attended by a large majority of the prominent manufacturers. The conference was entirely harmonious in the opinion that there was no necessity to change prices, it being for the best interest of all to maintain the present prices.

Machinery Requirements of New York, New Haven & Hartford Railroad.

Another fair sized list of machine tools has been received in the trade and merchants are now preparing their bids. This list was sent out by the New York, New Haven & Hartford Railroad and covers about 24 tools, aggregating about $15,000 in value. In sending out the specifications the railroad did not state what shops the tools were for, but it is understood that they are for the shops at Cos Cob, Conn. The issuance of this list shortly after the closing of the large list of the New York Central Railroad, has had a good effect upon trade and is thought to be an indication that this road will also come into the market for considerable machinery in the near future. It is understood that the road is in need of repair shops at the western end of its system, and it will not be surprising to see it go ahead with plans for its proposed new shops at New Haven. It is not likely that purchases against this list will be made this year, but will be among those made early in the new year.

Machinery houses will receive some good business from the Standard Oil Company before the close of the year. It is understood that the company has assembled bids and will place orders this week for the greater portion of machine tools on the list issued a week or so ago. These tools are required for the new shops to be erected at Bayway, N. J., and the placing of orders will probably mark the beginning of a buying movement which will extend over a considerable period and cover many classes of machinery. In addition to the shops the company is to build a large refinery which will be one of its main plants and the products of which will be principally for export. The company is understood to be preparing for the building of a large number of additional ships for the construction and repair of which considerable equipment will be installed. It will be remembered that plans have also been prepared for important construction work at Oil City, Pa.

There is no truth in the report that the Niles Tool Works of the Niles-Bement-Pond Company, at Hamilton, Ohio, has closed down indefinitely for lack of orders. The report was probably started from the fact that the company closed down its works December 21 for two weeks for inventory and repairs, and they will be reopened January 26. The company has a considerable amount of work on its books which, with the new orders being received, will be sufficient to keep the plants in operation for some time to come.

About 33 acres of ground near Ellwood City, Pa., along the line of the Pittsburgh, Harmony, Butler & New Castle Railroad, has been purchased by the United States Metal Recovery Company, People's Savings Bank Building, Pittsburgh, which intends to erect a plant on the property for the treatment of ores for the recovery of rare metals by its process. The main building of the plant will be 85 x 150 ft., of structural steel, and the equipment will consist of considerable ore handling machinery, electric plant and the necessary appliances required for handling the metal. The company expects to start work on the plant soon after the first of the year if weather conditions will permit, and contracts for the material and equipment will be let by its engineers.

It is expected that considerable machinery will soon be purchased by the South Atlantic Car & Mfg. Company, Waycross, Ga., which has about completed plans for rebuilding its plant which was recently destroyed by fire. The plant will include an assembling shed about 20 x 500 ft.; forge shop, 100 x 200 ft.; paint shed, 50 x 300 ft.; woodworking shop, 100 x 280 ft.; a large storage room and other buildings. The company is understood to have made the necessary arrangements for the construction of the plant, and it is expected that building will be started as soon as details can be determined.

The American Foundry & Mfg. Company, St. Louis, Mo., will require about 175 hp. of generating equipment, brass working tools and a complete plating and polishing outfit to replace the equipment which was lost in the recent fire at its plant.

The Kosciusko Oil Mill & Fertilizer Company, Kosciusko, Miss., whose lenter mill and press rooms of its main oil mill plant were recently destroyed by fire, will rebuild as soon as it can prepare plans and specifications. The new building will be fireproof and about 48 x 140 ft. The company is in the market for a full equipment of oil mill machinery and may purchase a 20 x 48 in. Corliss engine. All communications should be addressed to J. O. Ashworth, chief engineer.

The Great Western Power Company, of which Edwin Hawley, 25 Broad street, New York, is president, has been doing a great deal of buying of late for a large hydro-electric power plant at Feather River, Cal., on which work is now well under way. The power, to be developed from the river, is to be distributed throughout northern and central California, and the first unit will consist of about 60,000 hp. The company proposes later on to develop about 120,000 hp., and the ultimate capacity of the proposed plant is to be about 420,000 hp., although it will be several years before the entire project is completed. In addition to furnishing power for manufacturing purposes, the company proposes to furnish water in a large tract of country for irrigation purposes. The project will include the construction of a tunnel about 3 miles long and 20 ft. in diameter, through which the water which develops the power will be carried. In addition to a large amount of power equipment the company has been buying a great deal of out of door equipment, to be used in the building of dams, and one section of the work will include the construction of one of the largest reservoirs in the world. The company is capitalized at about $25,000,000 under a California charter, and Brown-Wilson & Co., New York and San Francisco, are the financial agents.

E. M. Friedman, 11 Battery place, New York, has been engaged as consulting engineer by J. T. Castle of Irvington, N. J., to superintend the purchase of equipment for a 20-ton ice plant to be erected at Irvington. The building will be three stories in high and 44 x 100 ft.

Inquiries have been made in the trade by J. J. McKenzie of the Standard Bleachery Company, Rutherford, N. J., for one 600-hp. engine and one 400-kw. generator, to be installed in the company's plant at Rutherford.

Catalogues Wanted.—J. T. Pate, Atlanta, Ga., formerly with the Magnolia Metal Company, will establish himself on January 1 as a manufacturers' agent in that city and desires catalogues of general machinery and supplies. He can be addressed at Post Office Box 1072, Atlanta, Ga.

Chicago Machinery Market.

CHICAGO, ILL., December 23, 1907.

Active business in the last fortnight of the year, even under normal conditions, is not usually expected. Though no doubt accentuated by the prevailing depression, there are increasing indications of a favorable turn soon after the first of the year. The past week has brought out a number of significant inquiries, some of which have come from the railroads. These are taken to mean that needs held in abeyance for some months are becoming imperative and seem to foreshadow the placing of orders in the near future. It will be remembered that a number of important installations on which bids were submitted have within the past few months been held up, due in some cases to financial stringency and in others doubtless to the prevailing belief in a decline from present price levels. Whether hopes thus inspired will be realized remains to be seen. There is, in fact, at the present time, not enough business moving to cause a decline by reason of strenuous competition. Among the week's transactions in machine tools is included an order for lathes, planers and other machines, amounting to $7000, which was secured by a prominent dealer. Other interests have booked a few scattering orders, mainly for single tools, and report an increasing number of inquiries.

An interesting exhibit of cement making machinery was shown last week at the Coliseum in connection with the convention held by the Northwestern Cement Products Association. A large number of machinery manufacturers were represented, the exhibits including concrete block machines, concrete mixers, reinforcing material, and other appliances used in connection with concrete construction. The show was well patronized, the attendance being composed largely of persons interested in one way or another in this industry. The exhibitors of machinery reported a satisfactory volume of sales and plentiful inquiries that lend assurance to the prospect of active work in building construction in 1908. The growing popularity of concrete as a building material has opened an extensive field of operation for new forms of machinery. Many of the modern machines are built in power driven units, which in turn furnishes a new outlet for motive power equipment. In this connection it was noticed that the General Electric Company, the Western Electric Company and a number of gas engine builders were represented among the exhibitors at this show.

While the larger enterprises in electrical installations are not in evidence as purchasers of equipment, there is, nevertheless, a fair amount of business developing from the requirements of smaller plants. Manufacturers of electrical machinery are looking forward to a demand, which they believe will assume satisfactory proportions as soon as a normal supply of money is available for the carrying out of improvement plans already formulated. It is known that throughout the West there are numerous projects for the installation of power and lighting plants and interurban roads, quiescent only because of the conditions that make it impossible to finance them.

The village of Fowlerville, Mich., has issued bonds to provide funds for the construction of a water works system. The contemplated plant is to have 1,000,000 gal. capacity. A committee, of which Tunis Miner is chairman, has been appointed to purchase pumps, machinery and material for the plant. The Fowlerville Lighting Company, heretofore a copartnership, has been incorporated.

The Milwaukee Locomotive Mfg. Company, North Milwaukee, Wis., recently organized and incorporated with a paid up capital of $50,000, is equipping a plant for the manufacture of gasoline locomotives for industrial use. One locomotive has been built, and for the past six months has been subjected to the severest test in switching freight cars around industrial plants and in stringing trolley wires on electric railroad extensions. The company recently purchased six new machine tools from the McDowell-Stocker Machinery Company, Chicago, for immediate delivery.

The Valley City Machine Works, Grand Rapids, Mich., has been incorporated with a capital stock of $30,000, of which $25,000 is paid in. The company will manufacture a line of wood working machinery, including carving, boring, shaper and jointer cutters, wood lathes and wet and dry grinders. The machinery requirements have been supplied. The company is officered as follows: Wm. A. Whiting, president; James A. Wilson, vice-president; John Hulst, secretary and treasurer; J. C. DeBruyn, manager.

The Bayley Mfg. Company, Milwaukee, Wis., reports an encouraging number of inquiries, which it regards as indicating a decided improvement in business after the first of the year. Recent sales and installations made by this company of heating, ventilating and drying apparatus, include equipment for the Grand Trunk Railway's new shops at Battle Creek, Mich.; Commercial Distilling Company, Terre Haute, Ind.; Graton & Knight Mfg. Company, Worcester, Mass., and two engines for the Purington Paving Brick Company, Galesburg, Ill. The Adams and Franklin schools, at Duluth, Minn., and the Nineteenth District school, Milwaukee, Wis., have also been supplied with heating and ventilating apparatus.

The Prime Steel Company, Milwaukee, Wis., will open an office at 701 Fisher Building, Chicago, January 1. This company was recentliy organized to manufacture motive power equipment steel castings. The Chicago office will for the present be in charge of O. L. Prime, president.

Besides a number of orders recently booked by the Northern Engineering Works, Detroit, Mich., for Newton cupolas, export shipments for two such equipments have been forwarded to Havre, France, and Genoa, Italy.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 23, 1907.

While immediate business in the local machinery market has been very small the past week, the trade expresses the opinion that at least a partial resumption of business will develop shortly after the turn of the year. Many of the propositions which have been held up the last two months, from one cause or another, will, it is believed, receive some attention after the year has closed, as after stock accounts have been taken and balance sheets scrutinized, the trade will again be in shape to consider the purchase of equipment. It is not expected, however, that the amount will be large, as transactions will likely, owing to the prevailing conditions, be on a most conservative basis, but a number of buyers who would have bought before the close of the year under ordinary circumstances have, in view of the existing financial conditions, been adverse to making expenditures for this year's account, and such buyers are expected to come into the market to a limited extent early in the coming year.

The financial situation continues to improve. Uncertainty will no doubt prevail for some little time, but indications are favorable for a continual improvement. Collections in some cases are reported better, but still are not satisfactory. Currency is in more ample supply, and no complaint on this account is now heard of.

There is not much new inquiry for tools. In fact, not a great deal is expected, as plants are for the most part considering affairs in connection with the annual closing of business. In view of the general inactivity of the trade there will, no doubt, be a more extensive cessation of work the closing week of the year. Plants which have usually closed down for one or two days to take stock will more likely close most of the week, if not for the entire period. A number of the industrial establishments and mills, that have been short on orders for some little time, have already suspended operations, and will likely continue idle for two weeks at least, and some for even a greater length of time, unless orders become more plentiful.

Manufacturers of machinery and tools, particularly those of the standard types, have not booked a great deal of new business. A few orders for tools of the medium class have been taken, but business has been pretty well scattered. Orders on hand are well caught up with except in heavy and special equipment, in the building of which considerable time is necessary. Curtailments of a more or less minor character continue to be adopted, as fast as it is necessary to adapt circumstances to the existing conditions.

No new developments have come out in connection with the foreign demand. Inquiries for machine tools have been few, although some small business in the way of special tools has been before the trade. Those transacting an established trade abroad in power transmission machinery note a falling off in orders incident to the closing of the year.

The second-hand tool and machinery market is dull. Business has been largely of a minor character, and there is little improvement anticipated until after the turn of the year. The same conditions exist in the boiler and engine trade, both as regards new and second-hand equipment.

The situation in the iron and steel casting trades remains unchanged. Foundries, as a rule, are running on partial time, frequently but three or four days a week. Contracts for future delivery of castings are scarce. A number of plants will likely shutdown during the holiday period for stock taking and repairs.

The contract for a large garage to be erected for Henry C. Lea on North Broad street has been awarded by the architects, Watson & Huckle, to the William Steele & Sons Company, and work will be started at an early date. The

building will have a frontage of 120 ft. on Broad street and extend 100 ft. in depth to Watts street. The plans arrange for three complete garages, with showrooms, storerooms and extensive repair shops.

The Philadelphia Roll & Machine Company, which has been extremely busy the past six months, now begins to note a falling off in the demand for mill machinery and charcoal iron castings. The plant is still busy, however, and has orders enough on hand to keep it in full operation for at least three months. Shipments recently have been quite important and include heavy sand cast and chilled charcoal iron rolls to many of the large steel and iron plants, while heavy mill and machinery parts have been supplied other customers.

The Baldwin Locomotive Works denies the current report that extensive improvements, including a large erecting shop for engine repair work, were to be made to its plant at Eddystone, Pa. The report that the Russian Government was in the market for 1000 locomotives has been investigated by the firm, and is without foundation.

The J. G. Brill Company, notwithstanding domestic inactivity, reports considerable business in the export trade, and orders have been booked recently for some considerable equipment. This company recently shipped 50 cars to the Companiá Lacroze, Buenos Ayres, Argentine; a special train of five cars to Japan, and additional equipment to the island of Malta.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 23, 1907.

A review of the local field in the lines of machine tool construction reveals some interesting, if not strange, results. For instance, there are concerns whose specialty is upright drills, or shapers, or milling machines, or boring machines which have not altered either running time or working force, and have seen no ill effects of the past two months, save in cancellations from the dealers, which all have had. Others, such as establishments making a specialty of lathes, have reduced both time and men, and have felt deeply the effects of the stringency indicated in hold-ups or cancellations, or both. But this is to be said of all: Heads of establishments, from president to superintendent are convinced now that the railroads have come from cover, and the banks are gradually retiring the scrip issues, that the matter of stronger markets is a practical certainty for the early new year.

A prominent official of one of the largest tool concerns in this field in conversation with *The Iron Age* representative made the statement that the month of December just closing will show the greatest results in shipments and general volume of trade of the entire year with his company, and the inquiries of the last two weeks have been especially encouraging.

Another note of encouragement is sounded by Secretary E. A. Muller of the King Machine Tool Company making boring machines. With the exception of a few days recently, when the plant was shut down to install a new boiler to furnish the increased power demanded, this company has been running full time and with its full complement of men. While cancellations of stock orders with the company were about on a par with others, but one bona fide contract for direct business was lost. Mr. Muller announces that the company has sufficient orders to keep the plant running full time until February 1, when he hopes that conditions will warrant a continuance of that activity. This plant will shutdown on Christmas and New Year's Day only. A large machine of 26,000 lb. will be shipped this week to a Kalamazoo concern; another, late in the month will go to Fitchburg, Mass.; three medium size machines will go to France, and another large one is for delivery to a local establishment.

The president of a large concern making shapers has, among other orders, one asking for a 26-in. tool for early delivery, requesting only a little extension of time. The amount involved is something like $2500. The instance is cited to show how large concerns are forced into a conservative attitude, which, however, is not sufficient to destroy entirely the buying tendency.

Inquiries with all tool manufacturers have materially increased during the week. As a rule, the employees of tool manufacturing concerns in this field have evidenced a willingness to co-operate with their employers in dealing with the situation, and employers have all shown a spirit of forbearance that is sure to redound to their benefit when the wheels of commerce resume their normal speed. A fair example of the situation is seen in the time book of one of the largest of the local lathe manufacturers which shows 36 hr. per week: 8 to 3 daily, closing at 12 on Saturday. Another manufacturer finds that his workmen appreciate better full time four days of the week, leaving three whole days for rest.

In the matter of castings, contracts, such as expire at the close of the year, will now be made by the tool manufacturers on the best terms possible, as it was determined after mature deliberation that the times were not propitious for the enforcement of any uniform contract with their foundrymen. The sliding scale basis is that in use most generally, and in the main it is found quite satisfactory to both manufacturers and melters.

There is little doing with the dealers in second-hand machinery and tools, and collections generally are not very good.

Among manufacturers of woodworking machinery there is a very optimistic feeling. The J. A. Fay & Egan Company will resume its 10-hr. schedule this week, and put on 100 workmen laid off a few weeks ago. Mr. Egan reports a $20,000 order for car work.

Local manufacturers are considerably elated over the figures from the report of State Labor Commissioner M. D. Ratchford to Governor Harris, which show the number of establishments reporting to be 1291, increase of 64; number of males employed, 50,490, increase of 3031; number of females employed, 16,023, increase of 445; capital invested in grounds, buildings and machinery, $115,998,390, increase of $20,322,311; value of goods produced or manufactured, $174,772,400.42, increase of $11,134,868.63; amount paid in wages, $33,935,486.93, increase of $557,376.77; number affected by advance in wages, 20,133; number affected by reduction in wages, 148.

Laurent Lowenberg of the Reliance Engineering Company of this city delivered a lecture before the American Institute of Electrical Engineers, Cincinnati Chapter, at the Grand Hotel. His subject was "Elements of Illuminating Engineering." Mr. Lowenberg takes the stand that proper illumination will enhance the working capacity of employees from 15 to 20 per cent., and that most manufacturing establishments and mercantile houses are badly lighted.

The Kern Machine Tool Company, on Spring Grove avenue, has leased additional space, 100 x 120 ft., and will erect additional buildings, doubling the capacity of the plant.

The Watkins Motor Works Company has just been incorporated at Columbus with a capital stock of $10,000, by Frank M. Watkins, W. C. Funks, M. A. Watkins, G. P. Watkins and W. J. Davidson. The new company will succeed the F. M. Watkins Mfg. Company, manufacturing marine motors, gas and gasoline engines.

The Central Association of Stove Manufacturers will hold its next quarterly meeting in Cincinnati in March. Stove makers from Indiana, Kentucky, western Pennsylvania and Ohio compose the organization.

At Zanesville, Ohio, a number of manufacturing establishments that have been either partially or wholly shut down are preparing to return to normal conditions. At the tube mill of the Mark Mfg. Company about 250 men have been taken on, and it is expected that the first of the year will see the entire plant running as usual.

The Zanesville Malleable Iron Company is working its full force and business is reported to be rapidly becoming normal. The American Rolling Mill plant on Linden avenue, Zanesville, is expected to reopen early in the year with its force of 300 employees.

At the annual meeting of the American Seeding Machine Company, Springfield, Ohio, E. Buchwalter was elected president; James A. Carr, vice-president; Burton J. Westcott, treasurer, and Frank C. Johnson, secretary. All the old directors were re-elected save Richard H. Rodgers, who was succeeded on the board by his son, Robert. A dividend of 1½ per cent. on the preferred stock was declared.

A new brick and steel foundry building has just been completed at the Indiana Reformatory, at Jeffersonville, Ind., measuring 138 x 320 ft. With the exception of the steel castings all the work on the structure was done by inmates. The output is purchased by the Indiana Mfg. Company.

The Oesterlein Machine Company, Cincinnati, has increased its capital stock from $30,000 to $100,000.

Work has commenced at Salem, Ohio, on the extensions and improvements to the foundry at the plant of the Victor Stove Company. It is hoped to have the addition ready for occupancy early in January.

The new model foundry of the Cincinnati Milling Machine Company will be started some time in January. This foundry is said to embody all the practical improvements known to the trade and is expected to attract considerable attention from all over the country.

Cleveland Machinery Market.

CLEVELAND, OHIO, December 23, 1907.

Conditions in the machine tool market show a tendency toward improvement. While business with the dealers is still very light some report a little more activity. The only buying, however, has been of single tools by small concerns. Some new inquiries for tools for additional plant equipment have come into the market, but all the prospective purchasers say that they will do nothing about placing their orders before the first of the year. Tool dealers are encouraged to

believe that their business will be fairly good during the early part of the coming year, because of the fact that quite a number of manufacturers are now figuring on building additions to their plants. If general conditions improve sufficiently many of these enlargements will be made, and that will mean the purchase of additional machine tool equipment. During the week a local dealer was asked to furnish estimates on machinery equipment for a new plant for a company that has not yet been organized. If the project goes through about $25,000 worth of machinery will be required. A number of other projects that were launched some time ago, but which have been at a standstill during the financial stringency will probably be carried out when conditions improve and create a further demand for machine tools. The local financial situation continues to improve slowly, although banks as yet are making but few loans. Collections are considerably better, and soon after the first of the year it is expected that the supply of money for the operation of industrial plants will be somewhat near the normal.

The situation as regards manufacturing plants shows but little improvement over a week ago. A few plants have slightly increased their forces of workmen that were greatly reduced when the financial stringency appeared, but those that have added more workmen are the exception. Few plants report an improvement in the volume of orders. Consumers are nearly all holding off until the first of the year, and a renewal of business activity is confidently looked for about the middle of January. Some builders of machine tools report considerable improvement in inquiries in the past few days, and while their orders have not yet increased they are hopeful that early next month a fair buying movement will start. Few, if any, inquiries are as yet coming from the railroads. Taking advantage of the lull, some of the local plants have shut down for a few days during the holidays, in order to take their annual inventories.

The foundry situation as yet shows no improvement. Local foundries continue to run at about one-half of their capacity, and find it hard to get orders to keep going at that capacity. A number of consumers have placed contracts for castings for next year, but in the contracts a greater range is made in maximum and minimum requirements for the year, because of the uncertainty regarding future business conditions. The small volume of work the foundrymen have on hand is largely due to the fact that they are unable to get specifications on their contracts, few, if any, consumers as yet placing orders for next year's delivery. Consumers, as a rule, have limited stocks of castings on hand, and a revival of business in other lines requiring castings is expected to have a quick effect on the foundry industry.

The American Shipbuilding Company, which reduced its working force to about 15 per cent. of its full capacity a few weeks ago, the curtailment being necessitated by the financial stringency, has put a large number of men back to work the past few days, and now has its plants running at about one-half their full capacity. The plants are now being largely employed in repair work, but as the financial situation improves the working forces will be increased and construction work will be rushed on new boats. It is expected that the plants will be running at their full capacity soon after the first of the year. The company has enough new boats under contract to keep its plants in full operation until next July. Not a single order for a boat has been cancelled in the recent industrial disturbance.

The plant of the Cleveland Automatic Machine Company has continued to run at nearly full capacity during the business depression of the past few weeks. This company has not escaped large cancellations of orders, but it had so much work on hand when the slump came that in spite of its cancellations it now has enough work on hand to keep the plant running for some time. The company's foreign cancellations were fully as heavy as its domestic ones.

Wtih a capitalization of $150,000, the Adamson Machine Company, Akron, Ohio, has been incorporated. The incorporation is the outgrowth of the machine shop business of Alexander Adamson. The company will probably eventually decide to erect a new and larger plant on another site. The incorporators are Alexander and C. S. Adamson, C. J. Gilletly, R. B. Koontz and W. E. Slabaugh.

The new crucible steel plant of the Imperial Steel Company, near Chagrin Falls, Ohio, is nearly completed, and a successful test of the furnaces was made last week. The company has not yet decided whether to place the plant in operation at once or to wait a few weeks until business conditions improve.

The Standard Clutch Company, Sidney, Ohio, which was recently incorporated with a capitalization of $30,000, has elected the following officers: President, E. L. Hoskins; vice-president, W. P. Harmony; secretary, James Van Riper; treasurer, Oliver Forrar. The officers and Frank Lucas, E. T. Aikman and H. L. Moore comprise the Board of Directors.

The Sunray Stove Company, Delaware, Ohio, has been incorporated with a capitalization of $15,000 to put a plant in operation for the manufacture of gas stoves and ranges. S. S. Blair is president of the company, and M. C. Russell, secretary-treasurer.

The Deming Mfg. Company, which was organized in Akron, Ohio, some time ago for the manufacture of the Deming mowing machine, is looking for a location in some northern Ohio town. When a site is selected the company will probably erect a new plant.

Manning, Maxwell & Moore, who in the past have maintained only a sales office in Cleveland, have leased showrooms in the Tabernacle Building, St. Clair avenue and Ontario street, and on January 1 will move from their present offices in the Williamson Building to their new quarters, where they will carry a line of machine tools.

New England Machinery Market.

WORCESTER, MASS., December 23, 1907.

A great many industrial works of New England will be closed much of the time until after New Year, for taking inventory and making repairs. This is the usual custom and would attract little attention were it not for the fact that business is poor and every one is on the watch for indications of changes in general conditions. December is always a poor month, excepting in very exceptional years, because there is a natural reluctance to make expenditures, excepting where it is absolutely necessary, just previous to the time when the year's business is to be totalled and annual meetings held, with reports to stockholders. It may be argued, of course, that business would be poor this December anyway, and doubtless this is true. But the general opinion is that the fact that the year is closing has had an important influence in postponing a change for the better in general demand. Every one is looking to see January go out in a very different atmosphere of business than will prevail with its beginning. Opinions vary as to the degree of reaction for better things, but the most depressing prophecy is that business will be fairly good. However, there are not a few business men who take that view of the situation where the future is included.

European dealers are complaining that the American machinery builders have been loading them up with every tool that has been ordered, regardless of deliveries that were suggested when the business was placed. One English dealer states that the stock of American tools abroad is some 50 per cent. above the normal, which fact has called for protest to the manufacturers. But in his letter he expressed the belief that the stock would be worked off in good time, so that it would not be very long before normal conditions would prevail again.

The Chandler Planer Company, Ayer, Mass., is bringing out a line of clutch driven frog and switch planers, designed for the heaviest forms of work. The first to be built is a 42-in. machine, and a 48-in. planer is in the works. The Chandler planer was first brought out in 1904 and has been marketed in two styles of 24 and 30 in. and three styles of 36-in.

Considerable inconvenience has been occasioned to manufacturers of Attleboro, Mass., by the receivership of the Jewelers' National Bank, following the death of the cashier. The Providence banks are coming forward to the assistance of the neighboring town, to enable them to make up their payrolls.

The interesting report comes from Bridgeport, Conn., that the business of the Remington Arms Company, Ilion, N. Y., will be removed to the Connecticut city in the near future. The story, which is unconfirmed, has it that the Remington Company will build a large plant on a site in the neighborhood of the works of the Union Metallic Cartridge Company.

Preliminary conferences which have been held with a view to the reorganization of the Electric Vehicle Company, Hartford, Conn., manufacturer of automobiles, now in the hands of receivers, have accomplished satisfactory results, and the probability is that the different interests affected will agree upon a plan by which new capital will be secured and the business continued on a sound basis. Tentative plans for the raising of this new money have already been made. The receivership, which was briefly mentioned in this column last week, is a friendly one. The liabilities of the company are given as $3,604,000, including a bonded indebtedness of $2,500,000, secured by mortgage on the property, and the assets are placed at $14,084,000, which includes the book value of patents and patent licenses, including the fundamental Selden patent of $11,447,000. The company is a New Jersey corporation with capital stock of $20,000,000. It is stated that the bondholders are showing no disposition to foreclose under the mortgage, believing that their interests will be best served under a plan of reorganization.

The Ideal Switch Company, Plainville, Conn., which was organized early in 1907 to manufacture switches, &c., for electrical work, has removed to large quarters in that town

and will manufacture screw machine products and press work specialties, as well as its line of electric goods.

A dispatch from Bangor, Maine, states that a new company has been organized at Castine, Maine, for the purpose of establishing a cannery, the prime movers being W. H. Ricker and Horace Crie. The modern cannery usually establishes its own plant for the manufacture of cans, and is a buyer of presses and similar tools.

The Osgood Bradley & Sons Company, Worcester, Mass., builder of railroad cars, has received an order from the New York, New Haven & Hartford Railroad for approximately $900,000 worth of passenger coaches.

The city of Hartford, Conn., is contemplating the establishment of a technical high school, and a special committee appointed to consider the general question has reported in favor of the erection of a building on Asylum street, adjoining the present high school. The nature of Hartford's industries would make the metal trades important features in the training of young men, which means that a considerable amount of equipment should be required for the several workshops.

I. I. Fonda & Co., New Haven, Conn., have taken manufacturing space in the F. P. Pfleghar Company's new factory building, and will manufacture sub press dies, jig, tool and fixture equipment for the production of interchangeable parts, and will build light, automatic and special machinery.

Government Purchases.

WASHINGTON, D. C., December 24, 1907.

There is to be erected at Gatum, Isthmus of Panama, a power plant, and the Isthmian Canal Commission will soon ask bids for the necessary equipment, to include boilers, boiler feed pumps, feed water heaters, economizers, vacuum and centrifugal circulating pumps, electric cranes, generators, &c. Additional equipment is required for the Culebra light plant, and the Isthmian Canal Commission will issue a circular asking bids for one cross compound Corliss noncondensing engine, for direct connection to alternating current generator, one 400-kw. generator, one engine driven exciter, one 10-ton hoisting block, &c.

The following bids were opened December 6, circular No. 402, for machinery for the Isthmian Canal Commission:

Class 1. Four 250-gal. pumps—Bidder 5, American Well Works, Aurora, Ill., $1660; 31, Fairbanks, Morse & Co., Chicago, $1403.32; 35, Gardner Governor Company, Quincy, Ill., $1544; 61, National Electrical Supply Company, Washington, D. C., $1748; 76, Charles E. Robidoux, St. Louis, Mo., $2408; 84, Alvin W. Snyder, Canton, Ohio, $1488 and $1588; 100, Woodward Wight & Co., New Orleans, La., $1605.12; 101, Henry R. Worthington, New York, $1702.96 and $1210.24; 106, George S. Fowler, Washington, D. C., $1570.20; 108, F. S. Banks & Co., New York, $1718.80; 116, D'Olier Engineering Company, Philadelphia, $3160; 118, Drew Machinery Agency, Manchester, N. H., $1510; 121, Fox Brothers & Co., New York, $1860; 122, G. & W. Mfg. Company, New York, classes 1 and 2 combined, $3600; 129, E. F. Keating Company, New York, $1700; 131, Manning, Maxwell & Moore, New York, $1594.88; 134, Motley, Green & Co., New York, $1960.

Class 2. Two 500-gal. pumps—Bidder 31, Fairbanks, Morse & Co., Chicago, $1374.94; 35, Gardner Governor Company, Quincy, Ill., $1320; 61, National Electrical Supply Company, Washington, D. C., $1300; 84, Alvin W. Snyder, Canton, Ohio, $1200; 100, Woodward, White & Co., New Orleans, La., $1840.96; 101, Henry R. Worthington, New York, $1428.88; 106, George S. Fowler, Washington, D. C., $1700.08; 108, F. S. Banks & Co., New York, $1274.80; 116, D'Olier Engineering Company, Philadelphia, $3200; 118, Drew Machinery Agency, Manchester, N. H., $1446; 121, Fox Brothers & Co., New York, $1340 and $1556; 122, G. & W. Mfg. Company, New York, classes 1 and 2 combined, $3600; 129, E. F. Keating Company, New York, $1650; 131, Manning, Maxwell & Moore, New York, $1410.92; 134, Motley, Green & Co., New York, $1650.

Class 3. One tool room engine lathe—Bidder 72, Pratt & Whitney Company, Hartford, Conn., $1405 and $1321; 131, Manning, Maxwell & Moore, New York, $948.

Class 4. One portable riveter—Bidder 1, Chester B. Albree Iron Works, Pittsburgh, $1200 and $975; 41, Hanna Engineering Works, Chicago, $775; 80, Joseph T. Ryerson & Sons, Chicago, $959; 121, Fox Bros. & Co., New York, $814; 131, Manning, Maxwell & Moore, New York, $749.90; 134, Motley, Green & Co., New York, $781; 139, Niles-Bement-Pond Company, New York, $1800.

Class 5. Six pneumatic riveters—Bidder 18, Chicago Pneumatic Tool Company, New York, $1400; 44, Ingersoll-Rand Company, New York, $1100; 134, Motley, Green & Co., New York, items 5 and 6, $1785.

Class 6. Three pneumatic motors—Bidder 18, Chicago Pneumatic Tool Company, $472.50; 27, Detroit Hoist & Machine Company, Detroit, Mich., $330; 44, Ingersoll-Rand Company, New York, $375; 131, Manning, Maxwell & Moore, New York, $418.86.

The following bids were opened December 13, circular No. 403, for supplies for the Isthmian Canal Commission:

Class 6. One motor generator set—Bidder 41, Motley, Green & Co., New York, $132.50; 42, National Electrical Supply Company, Washington, D. C., $150; 73, Westinghouse Electric & Mfg. Company, Pittsburgh, $138.

Class 18. Four pipe threading machines—Bidder 11, Central Metal & Supply Company, Baltimore, Md., $592; 23, Drew Machinery Agency, Manchester, N. H., $1594; 29, Handlan-Buck Mfg. Company, St. Louis, Mo., $380.60; 37, Manning, Maxwell & Moore, New York, $435.44, $513.32 and $1520; 41, National Electrical Supply Company, Washington, D. C., $384.80; 51, Queen City Supply Company, Cincinnati, Ohio, $462.48; 56, Charles E. Robidoux, St. Louis, Mo., $544; 72, Westinghouse Electric & Mfg. Company, Pittsburgh, $495.80; 75, F. T. Witte Hardware Company, New York, $540; 87, F. S. Banks & Co., New York, $503.60; 90, Fairbanks Company, New York, $570; 91, Fox Bros. & Co., New York, $498 and $507.76; 96, Knox & Bros., New York, $502.96.

The following bids were opened December 17 for supplies for the navy yards:

Class 1. Five induction motors—Bidder 98, General Electric Company, Schenectady, N. Y., $1949.20; 242, Westinghouse Electric & Mfg. Company, Pittsburgh, $1943; 253, Wagner Electric Mfg. Company, St. Louis, Mo., $2641.37.

Class 2. One universal radial drill—Bidder 2, American Tool Works, Cincinnati, Ohio, $2270; 43, Caldwell Bros. Company, Seattle, Wash., $2240.50; 113, Hallidie Machinery Company, Seattle, Wash., $2475; 149, Manning, Maxwell & Moore, New York, $2390; 163, Niles-Bement-Pond Company, New York, $2255; 186, Pacific Tool & Supply Company, San Francisco, Cal., $2515.

Class 3. Two double emery grinders—Bidder 43, Caldwell Bros. Company, Seattle, Wash., $684; 113, Hallidie Machinery Company, Seattle, Wash., $874; 169, Northern Electric Mfg. Company, Madison, Wis., $980 and $862; 183, Portland Machinery Company, Portland, Ore., $954 and $1070; 190, Roth Bros. & Co., New York, $960; 244, Western Electric Company, New York, $325.

Class 4. One band saw—Bidder 43, Caldwell Bros. Company, Seattle, Wash., $587; 48, Crescent Machinery Company, Letonia, Ohio, $800; 89, Frevert Machinery Company, New York, $764; 113, Hallidie Machinery Company, Seattle, Wash., $458; 117, Handlan-Buck Mfg. Company, St. Louis, Mo., $545 and $580; 149, Manning, Maxwell & Moore, New York, $780; 177, Oliver Machinery Company, Grand Rapids, Mich., $853.

Class 81. One steam winch—Bidder 13, American Ship Windlass Company, Providence, R. I., $1000; 134, Lambert Hoisting Engine Company, Newark, N. J., $745 and $635; 136, Lidgerwood Mfg. Company, New York, $1850; 151, Marine Mfg. & Supply Company, New York, $544.50; 233, Vermilye & Power, New York, $553; 247, Williamson Bros. Company, Philadelphia, $750 and $850; 257, Charles Machine Company, Cleveland, Ohio, $750.

Class 91. One engine lathe—Bidder 36, Baird Machinery Company, Pittsburgh, $782; 80, Fairbanks Company, New York, $796; 89, Frevert Machinery Company, New York, $638; 99, Garvin Machine Company, New York, $750; 108, Hendey Machine Company, Torrington, Conn., $860; 112, Hill-Clarke & Co., Boston, Mass., $680; 126, I. H. Johnson, Jr., Company, Philadelphia, $784; 149, Manning, Maxwell & Moore, New York, $853 and $828; 163, Niles-Bement-Pond Company, New York, $748; 180, Prentiss Tool & Supply Company, New York, $853, $812 and $769; 224, Thomas & Lowe Machinery Company, Providence, R. I., $740; 232, Vandyck-Churchill Company, New York, $649.

Class 92. One engine lathe—Bidder 36, Baird Machinery Company, Pittsburgh, $395; 80, Fairbanks Company, New York, $445; 89, Frevert Machinery Company, New York, $338; 99, Garvin Machine Company, New York, $423; 108, Hendey Machine Company, Torrington, Conn., $466; 112, Hill-Clarke & Co., Boston, Mass., $425; 126, I. H. Johnson, Jr., Company, Philadelphia, $405 and $467; 149, Manning, Maxwell & Moore, New York, $469; 163, Niles-Bement-Pond Company, New York, $397; 180, Prentiss Tool & Supply Company, New York, $446 and $360; 184, Pratt & Whitney Company, Hartford, Conn., $465 and $510; 232, Vandyck-Churchill Company, New York, $403.

Class 93 One crank shaper—Bidder 36, Baird Machinery Company, Pittsburgh, $280; 80, Fairbanks Company, New York, $298; 89, Frevert Machinery Company, New York, $244 and $314; 99, Garvin Machine Company, New York, $390; 108, Hendey Machine Company, Torrington, Conn., $395; 112, Hill-Clarke & Co., Boston, $300; 149, Manning, Maxwell & Moore, New York, $323 and $365; 163, Niles-Bement-Pond Company, New York, $343; 180, Prentiss Tool & Supply Company, New York, $339, $265 and $298; 189, Potter & Johnson Machine Company, Pawtucket, R. I., $405.

Class 94 One shaper—Bidder 36, Baird Machinery Company, Pittsburgh, $590; 80, Fairbanks Company, New York, $825; 89, Frevert Machinery Company, New York, $564; 99, Garvin Machine Company, New York, $750; 108, Hendey Machine Company, Torrington, Conn., $725 and $765; 112, Hill-Clarke & Co., Boston, $640; 149, Manning, Maxwell & Moore, New York, $774; 163, Niles-Bement-Pond Company, New York, $715; 180, Prentiss Tool & Supply Company, New York, $882; 189, Potter & Johnson Machine Company, Pawtucket, R. I., $726; 232, Vandyck-Churchill Company, New York, $431.

Class 95. One boring and turning mill—Bidder 29, Bullard Machine Tool Company, Bridgeport, Conn., $1667.85; 83, Walter H. Foster Company, New York, $2060; 149, Manning, Maxwell & Moore, New York, $1759; 163, Niles-Bement-Pond Company, New York, $2000; 180, Prentiss Tool & Supply Company, New York, $1755; 232, Vandyck-Churchill Company, New York, $1935.

Class 101. One rod and dowel machine—Bidder 9, American Wood Working Machinery Company, Rochester, N. Y., $265; 63, Drew Machinery Agency, Manchester, N. H., $242; 86, J. A. Fay & Egan Company, New York, $352; 117, Handlan-Buck Mfg. Company, St. Louis, Mo., $369.

Class 102. One centering machine—Bidder 108, Hendey Machine Company, Torrington, Conn., $270; 149, Manning, Maxwell & Moore, New York, $319; 184, Pratt & Whitney Company, Hartford, Conn., $260.

Class 103. One crank shaper—Bidder 81, Fairbanks Company, New York, $700; 99, Garvin Machine Company, New York, $770; 108, Hendey Machine Company, Torrington, Conn., $643; 149, Manning, Maxwell & Moore, New York, $774; 163, Niles-Bement-Pond Company, New York, $648; 180, Prentiss Tool & Supply Company, New York, $704; 189, Potter & Johnson Machine Company, Pawtucket, R. I., $495.

Class 104. One punch and shear—Bidder 50, Cleveland Punch & Shear Works, Cleveland, Ohio, $1275; 63, Drew Machinery Agency, Manchester, N. H., $1535, $1610 and $1815; 81, Fairbanks Company, Boston, $1400; 105, Hilles & Jones Company, Wilmington, Del., $1290; 149, Manning, Maxwell & Moore, New York, $1514; 163, Niles-Bement-Pond Company, New York, $1490; 180, Prentiss Tool & Supply Company, New York, $1535; 199, Joseph T. Ryerson & Son, Chicago, $1428; 226, Toledo Tool & Machine Company, Toledo, Ohio, $1650; 232, Vandyck-Churchill Company, New York, $1510; 251, Williams, White & Co., Moline, Ill., $1310 and $1465.

Class 105. One steam hammer—Bidder 63, Drew Machinery Agency, Manchester, N. H., $1717.50; 78, Erie Foundry Company, Erie, Pa., $1380; 149, Manning, Maxwell & Moore, New York, $1511.60; 158, Morgan Engineering Company, Alliance, Ohio, $1515; 163, Niles-Bement-Pond Company, New York, $1350; 180, Prentiss Tool & Supply Company, New York, $1740; 199, Joseph T. Ryerson, Chicago, $1741; 209, William Sellers & Co., Philadelphia, $1845 and $1930.

Class 106. One power miller—Bidder 81, Fairbanks Company, Boston, $709 and $734; 84, Fox Machinery Company, Grand Rapids, Mich., $710.50; 184, Pratt & Whitney Company, Hartford, Conn., $802.

Class 107. One milling machine—Bidder 33, Beaman & Smith Company, Providence, R. I., $4305; 83, Walter H. Foster Company, New York, $5070.

Class 108. One gear generator—Bidder 82, Fairbanks Company, Philadelphia, $2400; 97, Gleason Works, Rochester, N. Y., $2200.

The following awards have been made for supplies for the navy yards, bids for which were opened December 10:

Prentiss Tool & Supply Company, New York, class 11, one bolt threading and tapping machine, $305.

Vermilye & Power, New York, class 14, one pipe threading machine, $475.

Frevert Machinery Company, New York, class 15, one emery grinder, $143.

Under bids opened December 3 for supplies for the navy yards, the following awards have been made:

Manning, Maxwell & Moore, New York, class 1, one universal radial drill, $1897.

Caldwell Bros., Seattle, Wash., class 2, two 32-in. upright drills, $890; class 3, two 24-in. upright drills, $735.

Niles-Bement-Pond Company, New York, class 4, two 14-in. engine lathes, $2470; class 6, two 18-in. screw cutting engine lathes, $2586; class 8, two 24-in. screw cutting engine lathes, $4330; class 9, two 18-in. screw cutting engine lathes, $2786.

Pratt & Whitney Company, Hartford, Conn., class 5, one 16-in. new model engine and tool lathe, $1808.

I. H. Johnson, Jr., Company, Philadelphia, Pa., class 7, two 36-in. screw cutting engine lathes, $7912.

General Electric Company, Schenectady, N. Y., class 174, one motor, $1355.

Under bids opened November 19 for machinery for the navy yards, the following awards have been made:

Hilles & Jones Company, Wilmington, Del., class 51, one double angle and beam punch, $2430.

Waterbury Tool Company, Waterbury, Conn., class 52, four variable speed gears, $1006.

Shipments of Lake Mines in 1907.

BY DWIGHT E. WOODBRIDGE, DULUTH.

Both the Vermillion and Gogebic ranges showed a slight decrease in iron ore shipments for the year—the Vermillion 69,239 gross tons and the Gogebic 85,000 tons. The Mesaba shows an increase of shipments amounting to 3,660,234 tons. As the total increase of the year from the entire Lake Superior District is about 3,450,000 tons, it will be seen that the Mesaba supplied the entire amount, and made up for a diminution elsewhere. There has been a general decrease of tonnage from large mines on old ranges; for instance, as below, all production being given in gross tons:

	1906.	1907.		1906.	1907.
Chandler ..	318,990	245,690	Champion .	115,007	107,891
Sibley	271,496	.....	Ashland ...	341,841	298,056
Chapin	943,425	851,468	Newport ..	549,745	448,129
Norrie 1,244,468		732,679	Brotherton.	147,281	104,025
Hartford ..	364,801	328,202	Montreal ..	139,202	134,175
Lake Superior.....	635,671	549,751			

This is rather remarkable, considering the increased demand of the year, the higher price and the gain on the Mesaba. Some mines, new last year and not fully developed, have shown increases; others have gained, such as Mikado as an example of the first class, and the Pioneer of the second class.

Steel Corporation shipments from mines on all ranges for the year have been as follows:

Mesaba Range.

	1906.	1907.		1906.	1907.
Adams ...1,238,350		1,136,567	Morris ..1,809,743		2,076,521
Spruce ..	674,602	610,457	Winnifred-		
Fayal ...1,634,853		1,878,895	Day....	3,415	94,867
Genoa ...	179,468	108,610	Pillsbury.	33,546	489,728
McKinley.	.....	17,706	Glen	279,424	205,426
Gilbert...	.....	100,178	Clark ...	274,394	320,161
Duluth..	158,336	93,120	Chisholm.	379,156	258,793
Mountain			Myers ...	228,451	153,770
Iron....2,536,249		1,973,265	Hartley ..	.....	334,646
Virginia ..	5,674	1,015,762	Monroe ..	310,839	156,810
Higgins..	341,319	173,438	Tener ...	174,309	190,902
Hull	282,592	157,366	Canisteo .	.....	5,482
Rust	284,517	213,376	Holman ..	.....	8,068
Hull-Rust.1,690,311		2,900,624	Diamond.	.....	171
Sellers ...	241,031	155,060			
Burt-Pool.1,377,066		1,501,287	Total..14,137,645		16,331,056

Vermillion Range.

Pioneer ..	766,853	830,733	Zenith ...	181,580	235,772
Chandler.	318,990	245,690	Soudan ..	146,503	102,977
Savoy ...	106,933	270,155			
Sibley ...	271,496	.....	Total..	1,792,355	1,685,327

Menominee Range.

Chapin ..	943,425	851,468	Michigan.	146	40,423
Aragon ..	431,000	441,069	Mansfield.	.....	183,532
Riverton.	161,704	90,358			
			Total..	1,536,275	1,606,850

Gogebic Range.

Norrie ...1,244,468		732,679	Atlantic..	97,689	91,759
Aurora ..	.....	376,249			
Tilden ...	169,697	311,728	Total..	1,511,854	1,512,415

Marquette Range.

Hartford.	364,801	328,202	Volunteer.	38,544	10,022
Lake Superior...	635,671	549,751	Total..	1,375,119	1,224,686
Queen ...	221,096	228,820			
Champion.	115,007	107,891	Total, all ranges.	20,353,248	22,360,334

This gives the Steel Corporation about the same proportionate shipments as in most previous years—53.7 per cent. of the whole.

Shipments of Pickands, Mather & Co., all ranges, have been as follows:

	1906.	1907.		1906.	1907.
Mohawk .	92,715	128,870	Mikado ..	154,943	163,891
Corsica ..	100,606	172,237	Pike	17,934	24,921
Elba	255,580	134,488	Sunday		
Yawkey ..	.....	15,452	Lake...	86,879	101,899
Minorca .	155,541	154,657	Caspian .	80,875	139,092
Malta ...	115,763	82,064	Baltic ...	186,495	197,068
Troy	146,849	100,774	Vivian ..	122,577	48,493
Albany ..	356,371	437,522	Hemlock .	106,437	116,164
Utica ...	268,281	300,284	Calumet .	15,773	51,762
Cary	216,992	208,737			
Brotherton	147,281	104,224	Total..	2,627,892	2,682,599

Shipments of the Republic Iron & Steel Company, all ranges, were as follows:

	1906.	1907.		1906.	1907.
Alexander	60,547	119,278	Onondaga.	.....	521
Bessemer.	131,791	78,012	Pettit ...	82,757	36,074
Cambria .	40,628	135,144	Union ...	20,691	61,825
Franklin..	66,935	28,292	Victoria..	64,820	90,090
Kinney ..	57,691	145,989	Antoine		
Lillie	32,781	55,850	Ore Co.	195,855	101,019
Mariska..	.....	136			
			Total..	754,496	852,230

Shipments of various mines, all ranges, have been:

	1906.	1907.		1906.	1907.
Mahoning.1,274,232		1,563,000	Biwabik .	807,374	803,758
Stevenson.1,914,500		1,150,000	Cincinnati	.....	6,369
Iroquois .	190,971	254,329	Holland ..	95,472	16,908
Shenango.	383,717	387,093	Larkin ..	12,001	22,040
Wacoutah.	6,766	157,881	Ashland .	341,841	298,056
Nassau ..	.....	19,172	Ada (Iron-		
Morrow ..	64,073	35,898	ton)...	106,158	191,123
Cass	65,691	36,121	Anvil	70,493	26,695
Cyprus ..	192,144	260,946	Agnew ...	163,260	149,262
Adriatic..	3,294	70,190	Hawkins..	294,588	270,792
Lincoln ..	367,192	297,870	Castile...	2,108	6,157
Leetonia..	308,989	301,368	Colby ...	113,001	89,719
Fowler ..	.....	34,014	Eureka ..	37,525	54,645
Mayas ...	107,244	115,521	Germania.	9,436	13,585
Hector ..	37,221	65,952	Hennepin.	5,768	.....
Ajax	9,057	.....	Iron Belt.	3,227	14,837
Spring ..	.....	15,257	Montreal.	139,202	134,175
Alberta ..	.....	31,032	Newport .	549,745	448,129
Hobart ..	975	7,338	Ottawa ..	57,219	43,874
Williams..	17,685	26,488	Palms ...	5,622	.....
Miller ...	234,071	279,452	Yale	56,657	22,522
LaBelle ..	50,466	56,146			

The Pennsylvania Steel Pulley Company.—On December 6 the Pennsylvania Steel Pulley Company was incorporated under the laws of the State of Pennsylvania with a capital of $500,000, which is full paid. W. B. Rhodes is president and treasurer; E. W. Hough, general manager, and C. A. Agnew, secretary. This company, on December 20, purchased the entire business, plant, machinery patents, property, &c., of the Latshaw Pressed Steel & Pulley Company, Pennsylvania and Grant avenues, Allegheny, Pa., that for the past three years and a half has been developing an all steel split belt pulley. The Pennsylvania Steel Pulley Company at once started making additions to the plant and changing the arrangement of machinery, so as to make it a "continuous mill." The new company expects to be ready to begin the manufacture of steel pulleys on an enlarged scale early in January, 1908. The changes and additions being made to the plant will give it an increased output. The pulley will be known as the Keystone steel split pulley, and will be made in sizes from 12 to 60 in. in diameter.

The first mortgage bondholders of the Southern Steel Company have formed a Protective Committee, consisting of James T. Woodward, R. B. Van Cortlandt, Walter T. Rosen and F. Q. Brown, to co-operate in the rehabilitation of the company, which was put in the hands of a receiver about a month ago. There is outstanding $3,000,000 of the first mortgage bonds, of which $5,000,000 was authorized. The company is capitalized at $25,000,000, of which $15,000,000 is common and $10,000,000 is cumulative preferred stock.

The national revenues have so far this fiscal year shown a deficit, against a handsome surplus at the corresponding time last year. The deficit at the close of business December 21 was $7,110,760. The less favorable condition this year is due both to decreased receipts and to increased expenditures, but more especially to a falling off in receipts.

HARDWARE

THE question as to the policy to be pursued in regard to prices is frequently for the manufacturer at least, a difficult and complicated one. Sometimes indeed the question is practically settled for him, as the condition of the market is such as to make it not only evident but imperative that his prices be moved up or down, as the case may be. But in other circumstances the determining of the course to be pursued involves a broad view of the situation and a careful estimating and calculating of probabilities. In a market which is under suspicion, in which there is an undertone of weakness, it is not possible to lay down hard and fast rules as to the wisdom or unwisdom of reducing prices. Sometimes a substantial reduction satisfies the expectation of the trade and puts the article in question on a basis, so far as its price is concerned, which is regarded by merchants as a fair one at which it is safe to buy. A lowering of the price, however, has often as its first and natural result a diminishing of confidence in the strength of the market, and buyers continue to hold off, so that they may test the market, and they perhaps wait for further concessions. It is certainly the experience of manufacturers that the trade are reluctant to buy on a falling market.

An illustration of the fruitlessness of cutting prices in a time like the present when the trade are purchasing only such goods as are imperatively needed was furnished recently by the failure of a well-known manufacturer to effect sales of his goods even by a material reduction in price. With a view to securing orders in a line on which there has been a good deal of regularity in price he made a cut of about 20 per cent., expecting that this reduction would take the orders. The result was disappointing. The lower figures quoted made no impression on the buyers, and his goods remained unsold. Finding that the concession failed to accomplish its object it was withdrawn, and the market assumed its former quietude, the cut having indeed attracted scarcely enough attention to cause a ripple.

It would not be safe to infer from the above that it is a manufacturer's duty to maintain prices when the circumstances of the market, and especially the costs of production call for a reduction. It may indeed be laid down as a general principle that it is unwise to attempt to hold prices on an unreasonably high level. Diminishing sales, the encouragement of competition, and the inevitable reaction are the result. When to come down to a lower level, and by what steps, is a double problem which calls for the exercise of the best business judgment. But the first and fundamental question is whether a reduction is to be made or prices maintained on the existing level.

The letter of our Washington correspondent, which appears on another page, will be noted with interest, giving as it does the names of the new committees of the Senate and House on post offices and post roads. It will be observed that many changes have been made in the personnel of the committees, although the chairmen continue as before. This suggests the desirability of merchants making plain to the new committee members, especially, their consistent and deliberate opposition to any legislation in the interest of a parcel post on any of the lines suggested. Inasmuch as the framing of the annual Post Office Appropriation bill will be taken up immediately after the holiday recess, no effort should be spared during this interval of relaxation on the part of members of Congress to make plain to them personally or by correspondence the mischievous effects of parcel post measures which will come before them for consideration.

Condition of Trade.

The influences which have worked together limiting the volume of business during the past two months are now supplemented and reinforced by the holiday season with its interruption of the ordinary course of things and the laying aside to a certain extent of the attention usually given to the enterprising and aggressive prosecution of trade. Such orders as are coming in are, of course, taken care of, and a good many retail houses find themselves thus well occupied. Preparations, too, for the annual inventory are being completed. There is under these conditions naturally but little purchasing of goods by either jobbers or retail merchants. The buying for 1907 is over, and the buying for 1908 is not yet taken in hand. Meanwhile the financial situation is being closely watched, and the progress which is being made toward a healthful condition is carefully scrutinized. While there is some disappointment that this progress is not more rapid there is a general feeling of gratification that there has been such a substantial improvement in the situation with promise of an early and more complete recovery. A great deal of good work is being done individually by merchants and manufacturers in getting their business in shape, looking especially after collections and the closing up of accounts. This will be done more completely after the annual inventory, and the balancing of books furnish a basis for estimating the results of the year's business. Very little effort is being made by manufacturers to book orders. It is more generally recognized now than at any previous period of depression that it is poor policy to force goods on the market, in view of the caution with which merchants very wisely are conducting business, and in view also of the suspicion with which the trade, whether justly or otherwise, regard existing values. The conservatism of the manufacturers is a notable feature of the situation, as with few exceptions they are holding to their prices and avoiding an over accumulation of goods in their warehouses by restricting production. It is indeed the more easy for them to pursue this course because the financial condition makes collections difficult, and the scarcity of currency, which unfortunately still commands a slight premium, renders the obtaining of funds for the weekly payroll an additional problem. Many of the manufacturers are indeed still paying off in checks or certificates of one kind or another. This curtailment of production which is so very generally practiced by the manufacturers, large and small, may have an important effect on business next spring, when many anticipate that a shortage of goods may result. The year thus draws to a close with a good many problems awaiting solution, but under conditions which, taken all in all, furnish ground for confidence in the future and for anticipating the return of activity in trade and a substantial prosperity among the people. While the present state of things involves some perplexity and solicitude the trade will, it is hoped, look confi-

dently at the favorable features of the situation, and be able in a cheerful and kindly spirit to enter into the amenities and festivities of the holiday season. The reasonable enjoyment of the present and the cultivation of kindly and hopeful sentiments will give significance and worth to tokens of goodwill and the mutual expression of wishes for a happy and prosperous New Year.

Chicago.

The extreme dullness of the past week in Hardware lines is attributed largely to the engrossment of merchants in the task of winding up of the year's business. Salesmen are coming in for their holiday vacation a week earlier than usual, so that the canvass for business has practically ended for the year. Under the circumstances the jobbing trade is resting on its oars, passively awaiting the opening of a new campaign that will be inaugurated and vigorously pushed after January 1. Encouraging reports of trade prospects for the coming year are being made by returning salesmen. Those from the West and Northwest are impressed with the latent possibilities of consumption apparent in the resources of these fertile territories. They are unable to formulate any plausible theory upon which to base satisfactory reasons for a scant demand for goods, when the means for obtaining them are ample and available, as is the case in those territories. These conclusions are reinforced by an increasing number of inquiries for spring goods that is reported by jobbers. Orders for Wire Cloth and Netting, though somewhat short of those received at this time last year, are fairly plentiful, and are increasing. It is perhaps not so much an impairment of confidence in the probability of a good future demand that has restricted purchases, as the distrust of maintenance of prices at present levels. When the question of values is settled, either by a firm reaffirmation of existing schedules or by readjustment to a lower basis, much business will no doubt begin to move. In the meantime market affairs have been temporarily thrust into the background and are overshadowed by the all absorbing interest in holiday preparations.

NOTES ON PRICES.

Wire Nails.—The manufacturers of Wire Nails are wisely refraining from making efforts to market goods, waiting until the new year opens and the situation is more free from the uncertainty and hesitation which have characterized it. The mills are to a good extent availing themselves of the present lull in the demand to shut down and get things in shape for the active resumption of operations. This it is hoped will be called for in the near future. Meanwhile prices are very steadily maintained, quotations continuing as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

New York.—Business continues along moderate lines as demand is confined to immediate requirements. The outgo of small lots of Nails at store will not equal that for November of this year. Local jobbers and Nail houses are holding small lots at store at $2.[illegible] se. This price is shaded by some sellers, while others are adhering to the above price.

Chicago.—With practically the entire sales force of both jobbers and manufacturers in for the holidays, active effort for business is almost entirely suspended. Only a few sorting orders are coming in and, owing to the large amount of tonnage held up at the request of purchasers, shipments are light. How soon this business will begin to move depends on the turn of financial affairs. The next 30 days, it is believed by those closest in touch with conditions in the West, will bring a decided improvement in the demand from that territory. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New demand for Wire Nails is practically stagnant, but tonnage against contracts is being specified for at a fairly satisfactory rate, shipments by the mills being reported as slightly heavier. The stability in prices is the leading feature of the Wire Nail market, and reflects the wisdom of the manufacturers in agreeing to maintain prices, but to close their mills if necessary to prevent accumulations in stocks. It is believed that very shortly after January 1, general conditions will be better and demand for Wire Nails will improve. It will also be known by that time whether there will be any readjustment in prices. Quotations on base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery. 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

Cut Nails.—Many of the Cut Nail mills are closed so as to avoid piling up goods, and the manufacturers are quite generally holding aloof and not pressing Nails on the market. While there is not entire uniformity of prices, quotations are more even than they have been. The regular price to jobbers is $2.05 base for carloads, f.o.b. Pittsburgh, with freight added to destination. Retail merchants are charged 5 cents more, but this differential is not in all cases enforced.

New York.—There is a comparatively light demand for Cut Nails in this market. Local jobbers and Nail houses are holding small lots at store at $2.30, base. This price is shaded by some sellers.

Chicago.—The demand has been reduced to exceedingly small proportions, and jobbers report that beyond a few keg lot orders there is no business moving. What concessions might be secured on round lot orders is a matter of conjecture, since there is no temptation of that sort being offered. On what little business there is prices hold pretty firm. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, $2.38; to retailers, $2.43; Steel, to jobbers, in carloads, $2.28; to retailers, $2.33.

Pittsburgh.—The situation in the Cut Nail market shows no change, demand being light and a number of mills have either shut down entirely or else are running to about half capacity. Prices are fairly strong, but some mills are showing a disposition to market their product and to shade prices slightly to do it. For this reason some mills are shading the prices named below. We quote Steel Cut Nails at $2 to $2.05, f.o.b. Pittsburgh, for carload lots, and small lots at $2.10, to which freight to destination is added. Iron Cut Nails are being held at about $2.15, at mill.

Barb Wire.—There has been practically no change in the Barb Wire market since our last report. Both manufacturers and merchants are indeed out of the market for the time being. Meanwhile prices are steady. Many entertain the confident expectation that early in the year, when it is not unlikely that money will be plentiful, there will be an active demand; with the prospect of a fair season's business. Quotations continue as before, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—Trade in Barb Wire, so far as new business is concerned, is practically ended for the season. Existing contracts, on which specifications are being furnished in moderate volume, are approaching completion and the rush of mill shipments has subsided. A vigorous campaign for new business will be begun as soon as the salesmen return to their posts after the holidays. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, Bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Shipments by the mills are very light and practically no new tonnage is being placed. It is believed that very early in the year there will be a good demand for spring trade, and the manufacturers will con-

tinue their policy of not forcing their product on the market, but on the other hand will sustain prices and prevent accumulation of stocks by restricting output until demand improves. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Plain Wire.—Plain Fence Wire is moving slowly, but the leading manufacturers are making more deliveries than a short time ago. The sluggish condition of trade is such that comparatively few orders are being placed and buyers are not as a general rule seriously testing the market. After the opening of the year there is little doubt that a different condition of things will prevail. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—Subject to the same conditions that control the movement of its products, Plain Wire is not in great demand, orders being only for small lots to supply exacting needs. The shipments held up on account of the scarcity of money, it is believed, will be pretty generally ordered forward within the next 30 days, and in view of the known requirements of the agricultural communities and the possession of means to supply them, the outlook for new business is also encouraging. Quotations are as follows: In car lots, to jobbers, $2.08, f.o.b. Chicago, and to retailers, $2.15.

Pittsburgh.—We are now pretty close to the end of the year, and there is the usual tendency on the part of the trade to hold off placing orders. Practically no new tonnage is being placed, and the manufacturers are not trying to force their product on the market, but are lending their efforts to sustain prices until conditions improve. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

Bright Wire Goods.—As stated recently in these columns, the market for Bright Wire Goods displays increased regularity, the extreme prices of different manufacturers having been established on a more uniform basis. Discounts of 90 and 20 per cent. on Iron and 90 and 10 per cent. on Brass may be mentioned as representing the market in a general way.

Galvanized Ware, &c.—A concession of 5 per cent. has been announced by different manufacturers on Galvanized Pails and Tubs. Coal Hods are also slightly lower in sections where the market has been maintained on a comparatively high level. No general change is reported in Tinware prices, but there has been a slight readjustment covering a few of the heavier lines.

John Wilson's Butcher Knives and Steels.—Hermann Boker & Co., 101-103 Duane street, New York, have announced "Price-List 1908," giving new net prices on the John Wilson Butcher Knives and Steels, for which they are sole agents in America. The prices which are given below become effective January 1, and are uniform and universal throughout the United States. Hermann Boker & Co. request the co-operation and support of all jobbers and retail dealers in maintaining them. They also request that any instance of price cutting which shall come to the knowledge of a jobber or retailer be reported to them. The new prices are given herewith, terms 60 days, or 2 per cent. discount for cash in 10 days:

1908 *Price-List of John Wilson's Butchers' Steels.*

	Price per dozen.							
Size, inches.	8½	9	10	11	12	13	14	16
No. 54	4.20	4.90	5.75	6.40	7.25	8.30	9.35	....
No. 65	..	8.10	8.65	9.25	9.85	11.00	12.20	....
No. 66	..	8.95	9.55	10.15	10.70	11.90	13.00	14.25
No. 82	..	7.60	8.20	9.10	9.95	11.15	12.20	13.50
No. 92	4.90	5.70	6.40	7.00	7.95	9.00	10.10	....
No. 121	..	8.20	8.80	9.65	10.55	11.70	12.90	....
No. 122	..	8.95	9.55	10.40	11.30	12.65	13.80	....

1908 *Price-List of John Wilson's Knives.*

	Price per dozen.													
Nos.	026	26	27	28	29	30	43	44	45	46	47	48	49	86	88
Size, inches.	4½	5	5¼	5½	6	6½	7	8	9	10	11	12	13	14	16
Butchers' Knives	1.75	1.95	2.10	2.25	2.50	3.10	3.70	4.75	5.75	7.10	8.50	10.25	12.50	15.90	22.50
Butchers' Knives, rosewood handles	..	2.40	2.50	2.75	3.10	3.65	4.35	5.35	6.70	8.00	10.00	11.50	13.50	17.00	....
No. 1700, Narrow Steak or Bacon Knives	..	...	...	...	2.50	3.10	3.70	4.75	5.75	7.10	8.50	10.25	12.50	15.90	....
No. 4574. Curved Steak Knives	..	...	...	...	...	...	...	4.75	5.75	7.10	8.50	10.25	12.50	15.90	....
No. 3309. Boomerang Steak Knives	..	...	...	...	...	...	...	...	5.90	7.25	8.50	10.25	12.50	15.90	....
Skinning Knives	1.75	1.95	2.10	2.25	2.50	3.10	3.70	...	...	...	....	....	....	....	....
No. 4466 Skinning or Siding Knives	..	1.95	2.10	2.25	2.50	3.10	3.70	...	...	...	....	....	....	....	....
Sticking Knives	..	1.95	2.10	2.25	2.50	3.10	3.70	...	...	...	....	....	....	....	....
Boning Knives, beechwood handles	..	1.95	...	...	2.50	3.10	...	...	...	...	....	....	....	....	....
Boning Knives, rosewood handles	..	...	...	...	3.10	3.65	...	...	...	...	....	....	....	....	....
Ham Slicers	..	...	...	...	...	...	...	...	...	8.55	9.90	10.90	13.60	15.20	....
Ribbing Knives, beechwood handles	..	...	...	...	...	...	...	...	6.00	...	....	....	....	....	....
No. 4454. Provision Dealers' Knives	..	...	...	...	...	...	...	...	7.25	...	....	....	....	....	....
No. 1. Shoe Knives	1.10	...	...	...	...	...	...	...	...	...	....	....	....	....	....
No. 01. Shoe Knives	1.10	...	...	...	...	...	...	...	...	...	....	....	....	....	....
No. 08. Shoe Knives	1.20	...	...	...	...	...	...	...	...	...	....	....	....	....	....
No. 8. Shoe Knives	..	1.25	...	...	...	...	...	...	...	...	....	....	....	....	....
No. 09. Shoe Knives	1.20	...	...	...	...	...	...	...	...	...	....	....	....	....	....
No. 12. Shoe or Belt Knives	..	...	...	...	1.95	...	...	...	...	...	....	....	....	....	....
No. 13. Shoe or Belt Knives	..	...	...	...	2.25	...	...	...	...	...	....	....	....	....	....
Farriers' Knives	3.15	...	...	...	...	...	...	...	...	...	....	....	....	....	....

Tacks.—The Tack market continues to be in a fairly satisfactory condition, and some quotations recently sent out which were slightly below those made by the manufacturers generally have been withdrawn. In the present state of things, with little disposition on the part of jobbers to add to their stocks in this line, the manufacturers are refraining from forcing the goods on the market, and practically all of them are curtailing production materially, some shutting down their factories for a while.

Rope.—Prices on Fiber continue to go down, and as a consequence large buyers are not placing contract Rope orders for future delivery. Some mills are running moderately full, accumulating stock, which in their opinion will be required to satisfy spring demand. Other mills have closed down until the situation brightens. Wholesale houses and retail merchants are carrying light stocks, and the mills that are in a position to make prompt shipments when demand comes, will naturally get the business. Orders now represent the barest necessities, and are far from being plentiful. The following quotations fairly represent the market for base sizes: Pure Manila, 11½ to 12 cents; B quality grades down to 8½ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to 7¼ cents; No. 1 Jute, ¼-in. and up, 7½ to 8 cents; No. 2 Jute, 7 to 7½ cents.

Window Glass.—No improvement has taken place in Window Glass situation during the past week, either regarding a wage scale that the majority of the factories feel that they can accept and expect to come out whole financially, nor in factory prices, which are fair represen-

tatives of bargain sales. It is considered that a liberal estimate for the number of hand operated pots now in operation would be 400, out of a possible capacity of 1800 pots, in this country. Business is light with jobbers. Prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association are as follows: In the States of New York and New Jersey 90 and 15 per cent. discount for single and 90 and 20 per cent. discount for double strength Glass. Similar prices are supposed to prevail in Pennsylvania, but in New England discounts are said to be fixed at 90 and 20 per cent. for single and 90 and 25 per cent. discount for double strength Glass.

Paints and Colors.—The National Lead Company recently announced reduced prices on White Lead, Red Lead, and Litharge, as the result of the decline in Pig Lead prices. The prices per pound are as follows: Pure White Lead, dry and in Oil, in 100, 250 and 500 lb. kegs, 6¾ cents; in 25 and 50 lb. kegs, 7 cents; in 12½-lb. kegs, 7¼ cents; in 25-lb. tin pails (100 lb. in a case), 7¼ cents; in 12½-lb. tin pails (100 lb. in a case), 7¾ cents; in 1, 2, 3, and 5 lb. tin cans, assorted (100 lb. in a case), 8¾ cents. In lots of less than 500 lb., ½ cent per lb. advance over above prices. Red Lead and Litharge in 100-lb. kegs, 6¾ cents; in 25 and 50 lb. kegs, 7 cents; in 12½-lb. kegs, 7¼ cents. In lots of less than 500 lb., ½ cent per lb. advance over above prices. Red Lead and Litharge in barrels and half barrels, same price as in kegs. Terms: On lots of 500 lb. and over, 60 days, or 2 per cent. discount for cash, if paid in 15 days from date of invoice. Demand is light, as the falling prices in the raw material have offered no inducements to buyers to anticipate their wants.

Linseed Oil.—The large buyers are still out of the market, and what little business there is is confined to small jobbing lots. State and Western Raw are somewhat weak at quoted prices. Quotations are as follows: State and Western Raw, in five-barrel lots, 42 cents; City Raw, in like quantity, 45 cents, with 1 cent per gallon addition for less than five barrels. Boiled Oil is 1 cent advance on Raw Oil.

Spirits Turpentine.—During the week the local market has declined in sympathy with Savannah prices, which have fallen off. The Southern weakness is explained as resulting from the pressure to sell on a dull market, while buyers are not inclined to purchase owing to the unfavorable money situation. The New York market is represented by the following quotations: Oil Barrels, 45 to 45½ cents; Machine Made Barrels, 45½ to 46 cents. The project of the Turpentine Operators' Association to restrict the production of Turpentine and Rosins has been revived. The curtailment of these products has been attempted in the past without success.

REFERENCE has already been made to the organization of the Handle Manufacturers' Association of America and the primary objects for which it has been established. The officers of the association are as follows: President, T. R. Clendinen, Atchison, Kan.; vice-president for hickory division, P. C. Scott, St. Louis, Mo.; vice-president for oak and ash division, C. W. Sperry, Ft. Wayne, Ind.; vice-president for maple and minor woods division, H. B. Alexander, Hillsboro, Ind.; secretary-treasurer, H. H. Gibson, editor of the *Hardwood Record*, Chicago. Carrying out the purpose of the organization, the secretary will promptly take up the securing and collating, confidentially, of every detail of business information that will be of value to all, and disseminating it to each member of the organization in the form of a general and impersonal report. A special committee, co-operating with the secretary, will carefully analyze the matter of actual cost of manufacture, and make this a basis of true market values which every variety of handle production should justly bring.

THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has just prepared a new series of six single column mortised newspaper advertising electrotypes illustrating hunting scenes, which will be furnished gratis to Hardware and Sporting Goods merchants making application. In this connection the company will also be pleased to send electros of any Stevens models carried in stock by those applying for them.

AMONG THE HARDWARE TRADE.

Thomas H. Lohr, Berrien Springs, Mich., has purchased the stock of T. W. Reynolds, consisting of General Hardware, Builders' Supplies, Paints and Oils.

Alfred T. Wetmore has opened a Hardware and House Furnishing Goods store at 110 Harvard street, Dorchester Center, Dorchester, Mass.

Binder & Hillery, Comanche, Okla., whose Hardware store was recently destroyed by fire, have bought out the business of S. Sloan & Son and will rebuild at once.

The Independent Hardware & Lumber Company, L. C. Jakway, manager, successor to Geo. W. Melville and Stubbs & Jakway, in Durango, Colo., has been incorporated with a capital stock of $50,000 to conduct a wholesale and retail business in Hardware, Lumber &c.

A Hardware store has lately been opened by Rufus Keator, Paxton, Ill., who will carry a general line of Hardware, Tinware, Graniteware and Cutlery.

The Porter Hardware Company, Farwell, Texas, has been incorporated with a capital stock of $25,000, the incorporators being J. F. Porter, O. M. Conoley, R. N. Smith, R. E. Maddux and S. R. Smith.

The Northern Hardware Store, A. B. Klise, proprietor, Petosky, Mich., has been sold to S. J. Berger of Lowell, Mich., who will continue the business under the same title.

The name of the Jaynes Hardware Company, Greenwich, Conn., has been changed to the Greenwich Hardware Company, the new name to go into effect on January 1. No other change in the business has been made. George L. Geibel is the president and Thomas J. English secretary and treasurer of the company.

The partnership existing between Ervin E. Smith and Frank C. Lawrence, under the firm name of Smith & Lawrence, Lowell, Mass., was dissolved on the 21st. ult. Mr. Smith will continue the business under his own name at 47-49 Market street.

JOHN B. HART, who severed his connection with the Russia Cement Company, Gloucester, Mass., on December 1, has entered business on his own account as manufacturers' agent, with headquarters at 34 Wabash avenue, Chicago, Ill. Mr. Hart was connected with the Russia Cement Company for a period of 23 years, during which time he covered in the interest of that concern the territory from Cleveland west to Denver, north to Duluth and south to Memphis. In this wide section of country he was brought in contact with practically every wholesale Hardware, Paint and General Merchandise establishment, so that his acquaintance with buyers is quite an extensive one. Mr. Hart is prepared to take on one or two additional accounts from manufacturers of standard goods for sale to Hardware and general stores.

A FOLDER of almost poster dimensions calls attention to the holiday line of Thompson & Co., Mt. Jewett and Hazelhurst, Pa. This firm reports that its Christmas goods trade during the past three or four years has shown a handsome increase each year, indicating that the demands of their customers in this line have been satisfactorily met. This year nothwithstanding the money stringency an even larger assortment than ever before was laid in, a special drive being made in books.

DEATH OF JOHN H. TENK.

JOHN HERMAN TENK, vice-president of the Tenk Hardware Company, Quincy, Ill., died November 30, at Los Angeles, Cal., where he had gone to regain his health three weeks before, on a visit to his daughter. Mr. Tenk was born July 7, 1837, at Sudlohn, Prussia, and in 1844, with his parents, came to America. After staying six months in St. Louis they went to Quincy, where subsequently the son obtained employment as clerk in a dry goods and grocery establishment. In 1865 he, with his brother, Henry, started a Hardware store in Quincy under the firm name of H. & J. H. Tenk. Ten years later they moved to better quarters, buying the property, which premises are now occupied by the Tenk Hardware Company, which succeeded to the business of H. & J. H. Tenk in 1891. Since the incorporation of the business J. H. Tenk had been an officer of the company—first treasurer, and later vice-president.

This Hardware house is widely known throughout the West, partaking of the character of the men who have made it what it is, solid, substantial and progressive. Mr. Tenk had been a stockholder and director of the Ricker National Bank for many years, and in addition was interested in a number of other local enterprises. He possessed an affable, genial and agreeable disposition, and his attractive personality made many friends for him both in social and business circles. Mr. Tenk leaves a widow, two daughters and two sons.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

L. T. WIESS, Taaffe place, Brooklyn, N. Y.: Illustrated circular of the Shavezy Razor Guard, which is quickly adjustable to any width blade, removable instantly and changeable from right to left.

AMERICAN FOUNDRY & MFG. COMPANY, formerly Pleuger & Henger Mfg. Company, St. Louis, Mo.: Catalogue No. 32, devoted to Lawn Sprinklers, Spray Nozzles, Hose Pipes, Couplings, Nipples, Bushings, Bands, Valves, Boiler Stands, &c.

TRADE ITEMS.

THE tenth half yearly bonus payment at the Remington Typewriter factory of Wyckoff, Seamans & Benedict, Ilion, N. Y., took place on the 21st inst. More than $130,000 has now been distributed in this way to the most efficient of the employees who have been able to retain their positions for 10 years and more. In the factory hall on this occasion $13,800 in gold was distributed among 276 selected workmen, including two 30-year, 13 25-year, 40 20-year, 84 15-year and 137 10-year men. The certificates and prizes for good suggestions adopted during the last six months were awarded at the same time.

ANDREW FYRBERG & SONS MFG. COMPANY, Hopkinton, Mass., manufacturer of Firearms, for whom J. C. McCarty & Co., 21 Murray street, New York, are sales agents, advises us that there is no truth in the report that a prominent mail order house is in any way interested in the ownership or management of the concern. The company states that it has had no connection with any catalogue house since 1904.

THE GEO. A. LOWE COMPANY, Hardware jobbing house, Ogden, Utah, has increased its capital stock from $140,000 to $500,000.

H. G. DREISBACH of C. Dreisbach's Sons, Lewisburg, Pa., jobbers of Hardware and Cutlery, has just returned from a six months' visit to Europe.

Eikenberry Brothers, Russiaville, Ind., have purchased the business of the McCoy Hardware Store, Jonesboro, Ind., and will continue the business at the old stand.

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PREPARATION OF THE FOLDER AND ITS USE IN ADVERTISING.

BY H. L. MACCREADY.

FOLLOW-UP letters may be of the highest conceivable nature, both as regards the literary side, and the superior quality of the stationery, and the article or line may be far in advance of competing goods, but all will be of little or no avail if the general arrangement and description set forth in the folder is not overflowing with original, convincing statements properly presented.

Originality is claimed by many advertisers to be the main factor of all successful publicity, but costly experience has proved that originality presented in a crude, improper manner is far more detrimental to the advertiser's interests than the copying of some old ideas of another. Perhaps more fully is this exemplified in descriptive folders and pamphlets than in any other form of advertising.

The Folder is a Four Page Affair

never any more or any less. It comes between the dodger (which never should have been conceived) and the pamphlet. The folder is destined as a supplement to newspaper or trade publication advertising, and never should be used as a single method only.

Size and Paper Quality.

In getting out a folder the first and a very important consideration is the size, and some care and thought in this respect must be exercised in order that it shall be effective. If it is to be mailed only then it will need to be of a size that will fold for the envelope without injuring its appearance. One fold is advisable, and never more than two. If it is to be distributed as a handbill then the size that will slip into a man's pocket must be considered.

When the size has been decided upon the quality of the paper to be used should receive attention. Poor paper is somewhat like a high class clothing store giving as a premium a cheap dollar watch; people will justly be skeptical of the value of the goods. It is far more profitable to economize on quantity rather than quality.

The Cover Page.

The first page, which should have the appearance of a cover, should contain only the title and some border or design, which will give it a cover appearance. The name and address can be on the cover if in small type, but it is better to have it on the last page only.

The sight of advertising matter on the cover detracts from its effectiveness, and may prevent the reading of the inside. The cover matter should furnish an incentive, and should lead to an investigation. If all the business is on the outside few persons will read the inside.

The cover is the introducer and the title the cordial word. The title should be short, seldom of more than two or three words, and a blind title is sometimes advisable. The word "about" is very good, and is dignified, as About Lamps, About Snow Shovels. The minute it is read interest is created in the reader, and the first thing that comes to his mind is news. Trade-marks on the cover are permissible if they give the article or house an individuality. A plain readable but refined type is about the best; plainness is important. Sometimes cuts can be used to good advantage, but if they are preferred an artist should be consulted.

The Two Inside Pages

should contain some well executed illustrations, with a nicely worded introduction, followed by a heart to heart descriptive talk. Here common sense and honesty should prevail above everything else. Not boasting, or the talk of an auctioneer in a book store, but nicely turned convincing statements. Prices and terms should close the description, which may end on the third page, the last page being left blank, except for name and address of the advertiser.

The use of two colors of ink is not bad, but as a rule a very attractive folder can be gotten up with black alone in conjunction with good cuts.

An Influential Factor.

An effective folder is a powerful factor in influencing trade. Many a merchant has disposed of a multitude of goods through his folders and follow up letters alone, sold to people who have never met him and whose entire knowledge of the goods featured was gained only through the information conveyed to them by the printed matter thus distributed.

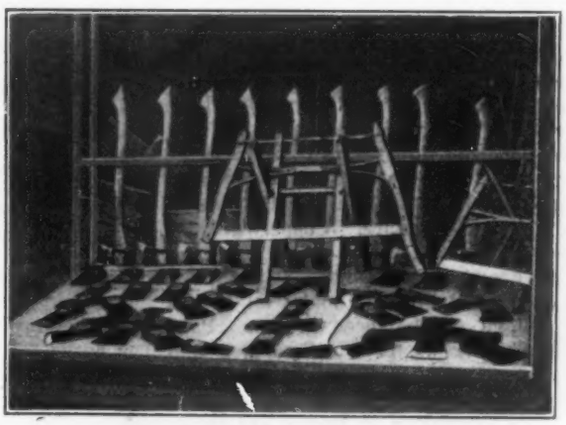
The man, therefore, who undertakes the task of preparing a folder or pamphlet has a work of vital importance to perform. On his faculty to breathe into its pages the philosophy that will create confidence, the enthusism that will inspire action, hinges in a large measure the success or failure of the effort to interest buyers.

TWO EFFECTIVE WINDOWS.

J. RUSSELL & CO., Holyoke, Mass., is fortunate in having a number of side windows which are so prominent as to command much attention. Although it is unnecessary to change these windows as frequently as

An Illuminating Display.

the front ones, the firm wisely keeps them attractively dressed, selecting for the purpose goods which are effective when seen at a distance, and do not require close examination. Two excellent examples of these displays are reproduced herewith, one of Lanterns and the other of Axes. The Lanterns made a very bright and imposing



A Reminder of the Woodshed.

array, easily suggesting the size and variety of the stock. The Axes looked especially attractive with their shiny blades, red labels and gleaming white handles. A Saw Horse and Buck Saw added to the suggestiveness of the display.

Holiday Trade in The Hardware Store.

Eighth Article.

AN ADVERTISEMENT FROM ILLINOIS.

ANOTHER effective page advertisement is that of the Stutzman Hardware Company, Buda, Ill., the upper part of which is reproduced herewith. In this case it will be observed that the list of Christmas articles is presented alphabetically. This announcement was also issued in the form of a circular, as appears from the following advices received from the company, in which brief reference is made to the manner in which Christmas business is pushed, and with good results:

We are again this year inclosing you one of our Xmas ads. We ran this ad. as a full page in a special colored supplement that our local paper got out and then had bills struck off. These bills were placed in every house and also in the farmers' rigs, and our Xmas business is showing the benefits of the advertising.

We also try to have specially nice windows at this time of the year. We use plenty of holly, &c., to decorate both windows and the interior of store. We do not aim at anything elaborate, but have enough decorations to give sort of a holiday touch to the entire store. We enjoy *The Iron Age* and are glad to hear from other merchants about their holiday plans and their experiences with different lines.

In the same advertisement the Buda and vicinity public were reminded of the company's Malleable Range exhibit, lasting from December 16 to 21, during which hot coffee and biscuit was served to visitors, souvenirs and cook books being given to ladies. The purchaser of each Range sold during the week was also presented with a set of cooking utensils or set of dishes free of charge.

CHRISTMAS CIRCULAR OF PENNSYLVANIA STORE.

THE Christmas number of Smith's General Hardware Store bulletin, Shrewsbury, Pa., was issued in the form of a circular, 12 x 18 in., the heading of which is reproduced herewith. Among the goods to which attention was directed are Japanese novelties, Toys in large assortment, Express Wagons, Skates, Games, Watches, Silverware, Copperware, Carvers, Cutlery, &c., on all of which prices are given, with sufficient in the way of illustration to make an effective and well balanced circular. Particular reference is made to books for boys and girls and Toy books for children, of which quite an assortment has evidently been secured. Special prices which are calculated to make an impression on buyers are announced.

THE AID HARDWARE COMPANY, West Plains, Mo., issued its twenty-second annual holiday greeting in the form of a large postal. The company's line for this season was a comprehensive one, including Lamps, fancy China, Cut Glass, Silverware, Toilet Boxes, Albums, Teddy Bears, Talking Machines, Dolls, Books, &c.

A MISSOURI FIRM'S HOLIDAY ANNOUNCEMENT.

WE reproduce herewith the pictorial heading of a page advertisement inserted in the local paper by W. S. Thomson Hardware Company, Craig, Mo., in the interest of the firm's holiday line. The central portion of the announcement was devoted to a list of articles making useful and acceptable gifts, the enumeration appearing under the heading "Christmas Suggestions from our Stock." The remaining space on either side and below was occupied with illustrations. Referring to its holiday advertising the company writes as follows, taking occasion to allude to the interest and value of the articles on the subject which have appeared in our columns during the past few weeks:

We enclose copy of our advertisement as it appears this week. We borrowed some of the ideas from your "Holiday Trade in the Hardware Store" articles. In the two previous issues of our paper we had advertisements relative to Christmas goods and will have another next week. Holiday trade has not been as good this year with us as in previous years, but think this is due to the money scare. We, however, hope it will turn out better than we expect, and we must say we are indeed indebted to *The Iron Age* for the helps in preparing not only this advertisement, but others.

Upper Part of Christmas Advertisement of Stutzman Hardware Company.

CHRISTMAS NUMBER
Toyland
Bring your Children, all are Welcome.
SMITH'S
GENERAL
HARDWARE STORE
CENTRE SQUARE. SHREWSBURY, PA.
Our Bargains
In Carving Sets are the biggest ever offered
Vol. 1 DECEMBER 1, 1907. No. 7
We herewith present to our Customers and others interested, a few suggestions for CHRISTMAS. We hope you will look them over and note the PRICES we have to offer. Being the LARGEST HARDWARE DEALER IN SOUTHERN YORK COUNTY, we are able to give you the largest assortment of goods at lowest prices. May you each have a Merry X-Mas and Prosperous New Year.

December Number of Smith's General Hardware Store Bulletin.

Holiday Goods Advertisement of W. S. Thomson Hardware Company.

MID-HOLIDAY SALES.

BY CLARFIELD.

WITH the passing of Christmas comes the usual annual problem of overcoming the dullness that seems to be a certain sequel to the pre-Christmas rush. Even when concentrated effort is made to overcome this condition there is of course a noticeable falling off of trade, but when no effort at all is made to counteract it the duty of going to the store on the days immediately following Christmas becomes almost a punishment.

Strengthening the Weak Points.

While the results will probably not be equally gratifying, it is, nevertheless, just as important to plan to build up the sales during such dull seasons as it is to endeavor to surpass the records of naturally busy times. The sales at the end of any given season will look much healthier and more encouraging if the weak points of the previous year have been strengthened by careful planning and well directed effort.

Frequently it is possible to show greater proportionate gains against a previous light record than against the heavy seasons which in a growing business become more and more difficult to overcome with each succeeding year. Another important consideration is the fact that during some naturally busy season bad weather or other unfavorable conditions may be encountered, and the effort during dull seasons will then help wonderfully to bring the average up.

This work requires thought and effort to bring effective results, and the mere fact that business is naturally more difficult to get during such "dull periods" makes it necessary that such plans should be unique and forceful. Long before the holiday trade is over, even before it has begun in many instances, plans ought to be well laid for the effort to be made between the holidays and after January 1.

Christmas Goods Cleared.

All Christmas goods which are in any sense novelties or confined in their sales solely to the Christmas season should have been cleared out before the store was closed on Christmas Eve. This should be accomplished even at the expense of sharp price cutting, if necessary. It is neither good business nor wise judgment to carry such merchandise over from year to year. The policy of carrying over ties up capital, encumbers stock and gives the public the impression that old merchandise is offered.

Articles for New Year's.

In planning the mid-holiday sale it should be borne in mind that practical articles are the ones that will attract, and these not for gifts, but for home use. Many families still follow the custom of "receiving" on New Year's Day, and for these functions all sorts of Table Ware and Kitchen Utensils should be good sellers. Others entertain for the day or have family gatherings similar to Thanksgiving, and the same general lines of merchandise will appeal to them.

Sale Should Be Advertised.

This special effort should be announced in the local papers and through the medium of attractive window displays. It is important, in fact essential, to take several articles of general use and make special prices upon them for this sale only. Among the things specially priced might be a Roaster, Raisin Seeder, Food Chopper, Nut Cracker, Tableware and such other articles as the merchant may deem wise. Together with these things mentioned in the papers and displayed in the windows should be Carving Sets, Serving Trays, Nut Picks, Fruit Knives, Card Trays, Cake Mixers and even Ice Cream Freezers, for many folks enjoy this delicacy in the winter as well as summer months.

If it happens that the Hardware merchant has a line of Glassware, then by all means he should display prominently Lemonade Sets, Decanters, Glasses and other articles suitable for use on New Year's Day.

Outdoor Goods.

Athletic Goods and other articles for outdoor use should not be overlooked. It will probably pay to devote one window to this line and give these goods a prominent place in the announcements in the papers, making several articles special in price, as in the case of the Household Goods. Local custom and the weather conditions will of course have to govern this portion of the effort to a great extent.

In many localities shooting contests are held on this holiday, and Guns and Ammunition should take a prominent place. If sleighing and skating are good, then feature Skates and Sleigh Bells and Robes as well.

Policy of Large Houses.

Such is the general policy of large mercantile enterprises, and it is due in a great measure to this plan of "taking time by the forelock" and studying out well in advance the nature of public demand that the unusual success of certain well-known firms can be attributed.

J. M. DAVIS & SONS' CHRISTMAS BULLETIN.

WE have on several occasions referred to the monthly bulletins issued by J. M. Davis & Sons, Oakland, Md., the publication of which has been attended with excellent results, many of the recipients looking forward to their coming with interest and pleasure. The December (Christmas) number is the largest yet issued, consisting of 48 pages. The front cover embellished with a Santa Claus pictorial design directs attention to the booklet as "telling of suitable articles for Christmas gifts." The bulletin opens with an article entitled "Why is the Retail Merchant Here?" this being followed by other matter, the major part of which has to do with the advantage and desirability of trading at home and encouraging local pride. A number of entertaining Christmas sketches are then given a place, every page carrying an illustration of Yuletide significance. The latter part of the booklet draws attention in an interesting and effective way to some selections from the firm's stock which are submitted as making useful and attractive holiday gifts.

Early the present year the Messrs. Davis adopted the cash system, and that the change in their method of conducting business was a move in the right direction and indorsed by their patrons is evident from the following statement which appears under the head, "Cash System Approved":

We are glad to state that our trade has largely approved of our cash system as adopted on the first of the year. We were of the opinion that what the people wanted was close cash price and not time. We are now fully convinced that this is the case; long credit is a thing of the past.

The manufacturer and farmer demand the cash for what they have to sell, and justly so. It costs time and labor to produce goods ready for the market, and in return they should receive the cash for their products. The same is true of the merchant. In order to buy at cash prices they mush have the cash to buy with, to buy direct from manufacturers, buy in quantities, to buy the goods before they are wanted, buy goods suited to their trade, buy the best and sell for cash.

The credit system was a necessity for our forefathers. Public works were not what they are to-day and money was scarce, wages low, mechanics, merchants and farmers had but little to spend; banks and large business houses were only found in our large cities, but how is it now?

All this has been changed. Men of all classes have work. Banks have been established in almost every town and village, so that the industrious man who has money to spare can safely deposit and take care of it, and when credit is required the banks stand ready to furnish the cash to those requiring credit, instead of the merchant, who was the banker in former years, thus furnishing cash to buy at cash prices.

The back cover of this creditable store organ supplies a calendar for 1908.

Otto Volkman has purchased the business of A. C. Gedenschager, in Schuyler, Neb., and will handle Shelf Hardware, Stoves, Tinware, Paints and Sporting Goods. A tin shop has been added to the business.

The Senate and House Post Office Committees.

(From Our Special Correspondent.)

WASHINGTON, D. C., December 23, 1907.

THE personnel of the Senate and House Committees for the Sixtieth Congress has been announced and the lists show many important changes. Great interest attaches to the makeup of the Post Office committees of the two houses, for the reason that upon them will devolve the responsibility for dealing with the parcel post, postal currency and other similar projects now being urged upon Congress by the Post Office Department, the Postal Progress League and the representatives of the catalogue houses. The lists as published confirm the announcement made in *The Iron Age* last week that Senator Penrose of Pennsylvania, would continue to head the Senate Committee, while Representative Overstreet of Indiana, would lead the House Committee.

The Senate Committee.

The new Senate Committee on Post Offices and Post Roads stands as follows:

REPUBLICANS.	DEMOCRATS.
Boies Penrose of Pennsylvania, chairman.	Alexander S. Clay of Georgia.
Jonathan P. Dolliver of Iowa.	James P. Taliaferro of Florida.
Redfield Proctor of Vermont.	F. M. Simmons of North Carolina.
Julius C. Burrows of Michigan.	Robert L. Owen of Oklahoma.
Nathan B. Scott of West Virginia.	—— —— (Vacant.)
W. Murray Crane of Massachusetts.	
Thomas H. Carter of Montana.	
Charles Dick of Ohio.	
Jonathan Bourne, Jr., of Oregon.	

Of the Republican members of the committee Senators Penrose, Dolliver, Proctor, Burrows, Scott, Crane and Carter served in the last Congress. Senators Dick of Ohio, and Bourne of Oregon, have been chosen in place of Senators Fulton of Oregon, and Hopkins of Illinois, who have been given other assignments. Of the Democrats, Senators Clay, Taliaferro and Simmons served in the last Congress. Senator Owen of Oklahoma, takes the place formerly filled by Senator Culberson of Texas. The vacancy at the foot of the committee formerly filled by Senator Rayner of Maryland, is still open, but an appointment will probably be made in a few days. Taken as a whole, and considered from the standpoint of the Post Office Department's programme, the makeup of the committee is satisfactory and it is believed that a direct vote will show a majority of at least one against any of the department's propositions.

The House Committee.

The new House Committee on Post Office and Post Roads is constituted as follows:

REPUBLICANS.	DEMOCRATS.
Jesse Overstreet of Indiana, chairman.	John A. Moon of Tennessee.
John J. Gardner of New Jersey.	David E. Finley of South Carolina.
Nehemiah D. Sperry of Connecticut.	James T. Lloyd of Missouri.
Howard M. Snapp of Illinois.	John H. Small of North Carolina.
Herman P. Goebel of Ohio.	Wilson S. Hill of Mississippi.
Halvor Steenerson of Minnesota.	Thomas M. Bell of Georgia.
William H. Stafford of Wisconsin.	Marcus A. Smith of Arizona.
Archibald P. Darragh of Michigan.	
Victor Murdock of Kansas.	
John W. Dwight of New York.	
George F. Huff of Pennsylvania.	
Warren A. Haggett of Colorado.	

Important changes have been made in the House committee as constituted in the last Congress. Representatives Hedge of Iowa and Sibley of Pennsylvania no longer appear in the list, but in their places the Speaker has appointed Representatives Huff of Pennsylvania and Haggett of Colorado. On the Democratic side Representative Griggs of Georgia has been retired, and his place is given to Representative Bell of the same State. In the retirement of Mr. Hedge the retail merchants of the country lose one of their strongest and most active friends, and it is doubtful if any other member of the committee can be counted upon to do such work as has been done by the Iowa member during the past four years.

In view of the fact that the framing of the next Post Office Appropriation bill will be begun immediately after the holiday recess, retailers in all lines should at once address protests against the parcel post projects to Chairman Overstreet and to the individual members of the committee. Communications sent in care of the House of Representatives, Washington, D. C., will be promptly forwarded should the members of the committee be absent from the Capital during the recess. Where practicable, delegations of retailers should call upon their respective Representatives who happen to be spending the holidays at home.

Joint Postal Commission's Report.

The Joint Postal Commission, which recently concluded an elaborate investigation of the Post Office Department with special reference to routine business methods, will probably submit its report to Congress soon after the holidays. While the conclusions of the commission will be adverse to a domestic parcel post, certain data will be submitted to both houses that will undoubtedly be used as ammunition by those who favor the Postmaster-General's projects. The commission will show, among other things, that the present postal deficit would be entirely wiped out if Government documents and other mail matter now transmitted under Departmental and Congressional franks were required to pay postage. The deduction is likely to be made that the cost of handling mail matter per pound is generally overestimated, and that the postal service can receive, transport and distribute printed matter and merchandise at less than the estimate of cost submitted by Third Assistant Postmaster-General Madden some years ago, which was approximately 14½ cents per pound.

These conclusions will no doubt be seized upon by those who advocate a lower rate on merchandise as an argument in favor of the Postmaster-General's proposition for the reduction of the general merchandise rate from 16 to 12 cents per pound. The fact should be borne in mind, however, that the present rate on printed matter is only 8 cents per pound, or an average of 12 cents on a pound each of merchandise and printed matter. If, therefore, it can be shown that the average cost of handling mail matter, except first class or letter mail, is as low as 12 cents per pound, it will nevertheless afford no argument for a merchandise rate of 12 cents unless the present rate on printed matter, which consists largely of books, is at the same time raised from 8 to 12 cents. The proposition to add 4 cents to the cost of transporting a pound of reading matter in order to enable the Department to reduce the cost of the merchandise shipped by mail order houses by the same amount, will hardly be urged upon the attention of Congress.

Penny Postage.

The situation in the projected campaign for penny postage calls for prompt attention. While several of the leading trade organizations are advocating penny postage in a perfunctory way as a sort of offset to the demand for a domestic parcels post, no satisfactory measure is now before Congress and none will be presented unless definite action to that end is speedily taken. During the past six years a penny postage bill, introduced by Representative Smith of Illinois, has been pending in the House. During the last Congressional recess, however, Mr. Smith died, and no one has since reintroduced his bill. There are undoubtedly many members of the House who would be glad to present such a measure if specifically requested to do so, but unless the matter is taken up in some influential quarter it will receive no attention in Congress and the efforts to arouse public sentiment favorable to penny postage will thus be wasted.

The Fitzgerald Bill a Radical One.

The advocates of a parcel post, however, have not overlooked the penny postage proposition, and a bill combining features of the two measures has been introduced in the House by Representative Fitzgerald of New York. This bill (H. R. 4035), is now being urged in certain quarters as a penny postage bill, and in view of the fact

that no other measure having a similar object is now pending, it may properly be so denominated. A glance at its provisions, however, shows that while masquerading as a measure designed to reduce the postage on first class or letter mail to 1 cent per ounce, its real object is to cut the merchandise rate far below that suggested by General Meyer. It provides as follows:

That domestic mail matter shall include all matter deposited in the mails for local delivery or transmission from one place to another within the United States, and between the United States and its possessions, which matter is now mailable under the law, and shall consist of two classes, to be known respectively as first and second class.

Sec. 2. That first-class mail matter shall consist of written and sealed matter, postal cards and private mailing cards, as defined and determined by the postal laws, regulations and rulings now in force.

Sec. 3. That second-class mail matter shall consist of all mailable matter not included within the first class.

Sec. 4. That all mail matter of the first class shall be subject to a postal charge at the following rates: On postal cards and on private mailing cards (post cards) conforming to the requirements of section 418, Postal Laws and Regulations, 1 cent each; on all other mailable matter of the first-class, 1 cent an ounce or fraction thereof.

Sec. 5. That all mail matter of the second class shall be subject to a postal charge at the rate of 1 cent for each three ounces or fraction thereof.

The sweeping change in the classification provided by Mr. Fitzgerald's bill would demoralize the business of the entire country. In the first place, it would abolish the publishers' rate of 1 cent per pound enjoyed by newspapers and legitimate periodicals, creating instead an inconvenient and illogical rate of 5 1-3 cents per pound, which would also apply to miscellaneous transient printed matter, which now pays 8 cents, and merchandise, which now pays 16 cents per pound. It is inconceivable that Congress will give serious consideration to this measure, but until the friends of 1-cent postage take action it will properly be known as the "penny postage bill."

THE AMES SHOVEL & TOOL COMPANY.

THE AMES SHOVEL & TOOL COMPANY, Boston, Mass., by Vice-President Charles H. Myers, announces that it will send about January 1, express prepaid, to the principal Hardware jobbers of the country, a framed picture of its various plants which it is hoped will be found worthy of a place in the offices of the recipients. The picture is 30 x 40, inclosed in a 2-in. brown oak frame with gold beading. It presents views of the different plants, namely: Oliver Ames & Sons Corporation, North Easton, Mass.; T. Rowland's Sons, Inc., Cheltenham, Pa.; the H. M. Myers Company, Beaver Falls, Pa.; Wright Shovel Company, Anderson, Ind.; St. Louis Shovel Company, St. Louis, Mo.; Elwood Steel Plant, Elwood, Ind.; Handle plants in the Southwest, and the Ames Building at Boston, together with an emblematic design, "We are the largest manufacturers of Shovels in the world," all grouped artistically within the frame. The souvenir is a fine example of color type work. The original watercolor sketches were done by an artist of reputation, and every care has been taken to make it one of the finest things of the kind. The picture affords an excellent idea of the splendid facilities enjoyed by the company and the commanding position occupied by it in the manufacture of Shovels, Spades, &c.

THE NIAGARA WIRE CLOTH COMPANY, Buffalo, N. Y., has just completed the installation of additional looms at its plant, which will enable the company to manufacture all grades of Wire Cloth, including Brass. Heretofore the company has confined itself exclusively to the Hardware grades. It is also the intention of the company a little later on to build an entirely new plant of large capacity. The present officers are James W. Murphy, president; J. H. Porter of Chicago, president of the Calumet Steel Company, vice-president; W. Eugene Richmond, treasurer, and F. J. Murphy, secretary. It is understood that under the reorganization contemplated the same officers will remain, with the addition of one or more vice-presidents.

BUILDERS' HARDWARE SAMPLE ROOM

IN the handsome and well arranged Hardware store of G. E. Russell & Co., Holyoke, Mass., there is a small room partitioned off which is devoted exclusively to Builders' Hardware. The maintenance of a sample room for this line of goods has been found advantageous by many merchants who do a large Builders' Hardware business, but the equipment of this firm is especially practical and therefore interesting to the average merchant.

Home Made Cabinet.

The room is not large, occupying a space not over 10 ft. square. Besides a desk and a couple of chairs, it contains only the inexpensive, home made cabinet shown in the illustration, which is stained cherry to match the furniture. This has a base about 3 ft. high by 2½ ft. wide, the top of which extends almost entirely across one side of the room. Above, at the left, is a case with glass doors perhaps 4 or 4½ ft. high. This occupies only one-half of the shelf, the balance being left clear for laying out samples, &c. The upper case contains three inclined shelves, affording a good view of the samples arranged upon them as shown in the picture.

Cabinet in Builders' Hardware Sample Room of G. E. Russell & Co.

In the base of the cabinet at the left are sample drawers, and to the right of these is a cupboard the full hight of the base, in which are kept store Door Sets and other bulky samples.

Sample Trunk.

A feature of the equipment which should not be overlooked is the heavy trunk which fits under the shelf at the right of the cabinet. This is a regular Builders' Hardware sample trunk fully fitted up with display boards, &c. It affords excellent facilities for keeping samples in the store, and is especially convenient when it is desired to solicit business at a distance or show goods to a customer at his home or place of business.

The J. R. Nagel Hardware Company, Cuero, Texas, has been organized and incorporated with a paid up capital of $10,000, and succeeds the firm of J. R. Nagel & Son, with practically no change in management. The officers are H. W. Nagel, president; H. J. Nagel, vice-president; R. A. Nagel, secretary and treasurer.

The Pittman-Coates Hardware Company, Inc., Battle Creek, Mich., has been acquired by S. F. Dobbins, Marshall, Mich., and on January 1 the title of the corporation will be changed to Dobbins Hardware Company. The business will be continued at Battle Creek as heretofore.

Thomas H. Pitzer has bought the Hardware stock and business formerly operated by Stanger & Beal, Cooksville, Ill.

RUSSELL & ERWIN MFG. COMPANY'S NEW BUILDING.

THE RUSSELL & ERWIN MFG. COMPANY, 43-47 Chambers street, New York, began early in December the occupation of its new steel, stone and brick six-story and basement building at Lafayette (Elm) and Walker streets, New York City, the erection of which began last summer, the company having disposed of its property on Chambers street, extending through to Reade, all of which has been occupied since 1883 and two-thirds of it since 1868. Previous to 1868 the company occupied various premises in Beekman and Cliff streets. The new building, now finished, has been constructed especially for the company's purposes and according to modern ideas of conducting large enterprises.

On Lafayette street the three fronts, Nos. 94-98, are approximately midway between Walker and White streets, with a frontage of 57 ft., and three large show windows. On the north an L uniform in hight with the main building runs through to Walker street, No. 91, having a roomy entrance 55 ft. deep and 20 ft. wide in the clear. Fully 25 ft. of this portion is brick paved, and the remaining space in the rear is reserved for a loading and unloading platform, having a concrete floor, thus enabling trucks to drive in and unload or load, with sufficient space for turning around to get back again to the street. This space is practically out of doors, but protected from the elements by the building overhead, so that in any kind of weather the entire operation of receiving and shipping goods can proceed under cover.

Structural Details.

The hights of the floors vary from 16 ft. at the street to 10 ft. on the sixth floor. Water is supplied from three tanks, one of them a horizontal steel tank on the top floor, being 7 x 32 ft., for serving the sprinkler system. On the roof are two wood tanks of about 10,000 gal. capacity for every day use. The usual equipment has been provided in the way of steam heat, electric light, two elevators and an up to date conveyor run by electricity. There is a large shaft from cellar to roof, communicating with each floor, through which to dispose of waste, &c. All floors are of concrete, the window frames, rear and sides, are hollow, of galvanized iron glazed with wire glass; there are fire doors on all floors and safety gates at elevator entrances. There are eight skylights in all and the steel frame construction is such that two additional elevators can be readily installed and two stories added whenever required. The staircases, of steel, are covered with slate; the concrete roof is finished with felt and slag, and the entire building is such as to present the least hazard and obtain minimum insurance rates.

Business Dates Back More Than 70 Years.

A sketch of the establishment and growth of this important Hardware house will recall much that is of interest to the trade. The nucleus of the business dates from the small Door Lock manufactory of F. T. Stanley in New Britain, Conn., previous to 1836, when with one or two assistants Mr. Stanley began in some one's machine shop the production of Plate Locks. Prior to that time all Door Locks are said to have been imported from England. The enterprise underwent frequent changes of title and ownership, until the entrance into the business of Smith Mattison of New York City, who purchased an interest in it and associated with himself Emanuel Russell. The latter afterward sold out to his son, Henry E. Russell, the firm then taking the title of Mattison, Russell & Co.

On Mr. Mattison's death Mr. Russell associated with himself Cornelius B. Erwin of Boonville, N. Y., who came to Connecticut as a drover with a herd of horses. The title then became Russell & Erwin, and eventually in 1851 the business was incorporated as the Russell & Erwin Mfg. Company. Isaac D. Russell, brother of Henry E. Russell, came to New York about 1851 and managed that branch of the business. Mr. Erwin in the early days of the partnership attended to the selling of goods in the South during a period of business depression in the fifties.

Origin of Artistic Bronze Hardware.

The Russell & Erwin Mfg. Company was the pioneer in the manufacture of Artistic Bronze Builders' Hardware. The forerunner of this branch originated in what was known as the compression process. Metal was forced into molds under considerable pressure. This mode of manufacture produced a casting of more perfect line and finer surface than anything previously obtained. The process was very expensive and subsequent developments in the ordinary methods of bronze casting eventually rendered it obsolete, although the use of it gave original impetus to the production of the ornamental Bronze Hardware of the present time.

Advent of Wrought Steel Door Locks.

This company also originated the Wrought Steel Door Lock, brought out first about 1887. It began the manufacture of Wood Screws in 1875-76 in New Britain. The competition thus introduced led to a severe trade contest with the American Screw Company, which up to that time had dominated the Screw business in this country. In 1885 the company acquired the business of the Dayton Screw Company, Dayton, Ohio.

The Company's Jobbing Business.

Originally Russell & Erwin came to New York as distributers of their own manufactures, but finding that they were not welcomed by the then large numbers of New York jobbers were compelled in self-defence to take on other lines than their own, in order to reduce the proportion of general expenses. This situation was what led the house to become jobbers of other makes of goods as well as sellers of its own production. The company's lines of manufactured products, largely Builders' Hardware, Screws and Squares, have, however, increased to such magnitude that the jobbing feature of the New York house has recently been curtailed.

The Company's Presidents.

The various presidents of the company, in the order in which they held office, are as follows: Cornelius B. Erwin, Henry E. Russell, Mahlon J. Woodruff, Henry E. Russell (a nephew of the former president), George J. Laighton and Howard S. Hart, the present incumbent.

The present officers of the New York corporation are Benjamin A. Hawley, president; Isaac D. Russell, vice-president; J. H. Van Newkirk, treasurer; W. H. Donaldson, assistant treasurer; William A. Cherry, secretary and Charles C. Haselton, assistant secretary.

A. H. BRIGGS.

A. H. BRIGGS, manager of the New York branch of of the L. S. Starrett Company, Athol, Mass., since it was established here 10 years ago, has resigned that position to go into business on his own account. He will be associated with W. M. Briggs, New York manager for the Rock Island Tool Company, Rock Island, Ill., manufacturing Vises, and the Joyce-Cridland Company, Dayton, Ohio, manufacturing Jacks. A. H. Briggs will represent manufacturers of first-class lines of Mechanics' Tools, and is now in a position to consider additional connections. He was for many years with the Frasse Company, New York, which dates back to 1806, when, as a Mechanics' Tool and supply house it was founded by Henry F. Frasse, and was its first treasurer when the business was incorporated January 10, 1893. Mr. Briggs is thoroughly familiar with the marketing of high grade Tools and supplies for machinists, jewelers and other workers in metals, and has an extensive acquaintance in the trade by whom he is highly regarded.

THE W. H. DAYCOCK, JR., & CO., 81-83 Fulton street, New York, have just been appointed Eastern representatives by the Ward-Dickey Steel Company, Indiana Harbor, Ind., for the sale of Dickey patent planished sheet steel, made from special analysis basic open hearth steel and finished under powerful planishing hammers. It is packed in metal cases and made in gauges 18 to 28, inclusive, regular sizes 28 and 30 in. wide by 60, 72 and 84 in. long, specials to order.

WHEELOCK RUST PROOF FENCE.

THE WRIGHT WIRE COMPANY, Worcester, Mass., is calling special attention to its line of Wheelock Rust Proof Fence, Flower Bed Guards, Tree Guards, Trellis, &c., having doubled its capacity in this line. Merchants will be furnished with a striking window card in natural colors, 14 x 22 in. in size. A handsome illustrated booklet is also in preparation, with an outside cover in colors and embossed. In describing its product the company states that it is especially strong, being made of extra large wires, securely locked, without bending or twisting, by steel clamps, making a solid joint. Designs are said to be simple, symmetrical and attractive to the eye and not obstructing the view. The Fence is galvanized after weaving, and is guaranteed rustproof. It is adjustable by means of the company's patent stretcher used at both ends. Posts, Gates, Braces, &c., are also galvanized and adjustable. The entire construction is said to be thoroughly mechanical and only the best of materials are used. Economy is urged as a great advantage of this Fence, as the cost of maintenance is the minimum, no painting or repairing being required. The company also offers a handsome scroll pattern Iron Gate which is self-closing and self-latching.

HERMANN BOKER & CO.'S PRICE-LIST 1908.

HERMANN BOKER & CO., 101-103 Duane street, New York, established in 1837, have adopted and are about to put in force a new plan of sales in the marketing of John Wilson's Butcher Knives, Steels, &c. In determining the principles of the new plan the house first sought the opinions of wholesalers, retailers and butcher supply houses handling this make of Cutlery in different sections over a wide territory, and, while there were differences of view as to the best method of bringing about desired results, there was practical unanimity as to the wisdom of accomplishing the object sought. The high reputation of John Wilson's Cutlery, reaching into three centuries, is such that there has been a temptation, in common with other lines of famous goods, to make a leader of it with which to influence sales of other goods, so that neither the manufacturers, their American representatives or the trade obtained the adequate profits.

An entirely new scale of prices, becoming effective January 1, and from which there will be no deviation, has accordingly been prepared by Hermann Boker & Co., who have handled this make of Cutlery for 40 years and have been the sole representatives in America for 25 years. With the system of prices decided upon it is anticipated that a reasonable profit will be secured by both jobbers and retail merchants. While the business in John Wilson's Knives has advanced steadily for years, Hermann Boker & Co. believe that the ratio of increase for staple goods of such accepted merit and international reputation should be greater. The present condition is attributed largely to a diminution of profits occasioned by competition and using the goods as leaders. The new schedule of prices to the retail trade will be found elsewhere in this issue.

The recognized position of John Wilson's Butcher Knives, the business of which was established in 1750 by John Wilson in Sheffield, justifies some reference to the firm itself and its product. The firm name has always been John Wilson, and until within about 10 years there has always been a Wilson identified with its direction. Among the kinds of Knives produced are Butcher Knives, Narrow, Curved and Boomerang Steak Knives, Skinning, Siding, Sticking and Boning Knives, Ham Slicers, French Chef Knives, Provision Dealers' and Bread Knives and Shoe, Belt and Farriers' Knives. There is also a fine line of Butchers' Steels in about 30 patterns, in lengths of from 8½ to 16 in. The most popular styles and sizes are heavily stocked in New York, but all varieties and sizes can always be obtained on import order. While the bulk of the trade is in beechwood handles, there are finer mountings in rosewood and ebony.

Every blade is strictly and solely hand forged now, as in the eighteenth century, from the best double shear steel, the house of John Wilson converting its own steel from Swedish raw material, none of which is used that in its raw state has not been stacked up on its own premises for priming or mellowing for at least four years before being converted into steel, while the wood for hafting is also naturally and thoroughly seasoned before mounting.

In the 157 years of business existence, it is asserted, the products of this house have never been sent out with other than the regular house brand; never under a special brand or even a special label to any one. Every Knife, every Steel and every package bears the trademark herewith illustrated:

TRADE MARK:

WHICH REPRESENTS

"FOUR PEPPERCORNS AND A DIAMOND"

I. WILSON
SYCAMORE ST.
SHEFFIELD, ENGLAND

Without this mark the house of John Wilson has never made goods, and it can be truly said that "John Wilson made the mark and the mark made John Wilson." Both the house and the mark are widely known in the markets of the world.

Another noteworthy characteristic of John Wilson's Knives and Steels is that in large measure generation has followed generation in families as workmen in the shops, the younger men or boys being taken on as the elders dropped out and trained from the start in the master's processes. At first there was but a single forge, at which the original John Wilson forged out with hand hammer and anvil (as has always been and still is done) the goods for sale to local butchers, one customer recommending another. Another peculiarity is a certain something in the hafting of the Knife, acquired by long experience, so proportioning and balancing that important part that its efficiency is markedly increased.

REQUESTS FOR CATALOGUES, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM RUPPEL HARDWARE COMPANY, incorporated in Cleveland, Ohio, with a capital stock of $10,000 to retail Shelf Hardware, Stoves, Tinware, Paints, Oils, Electric and Gas Lights. The company will also give attention to Roofing and Cornice work.

FROM THE LEWIS-SANDERS COMPANY, succeeding W. G. Lewis Hardware Company, Quanah, Texas, carrying a wholesale and retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, China and Queensware and Vehicles. The change is one of name only, the personnel of the concern continuing the same.

FROM WM. MCSPORRON-BEDDOW COMPANY, Gallup, N. M., which has lately opened up a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods, Harness, Wagon Repairs, Furniture, &c.

CHARLES MUNDT & SONS' NEW PLANT.

PRIOR to 1869 perforated sheet metals were almost unknown. Their use was almost exclusively confined to the kitchen colander and pepper box; wire cloth up to that time being used for sieves, strainers and screens for all screened material. No little demand for Wire Cloth Screens was made by the manufacturers of refined sugar, but no perforated metal up to that time had been used. In 1869 Charles Mundt, then employed by a concern which manufactured sugar machinery, became convinced that a substitute for fine Brass Cloth used in the refining of sugar could be made by perforating a sheet of brass, but how to accomplish this was a problem, as there were no perforating machines in use suitable to do the work. Mr. Mundt accordingly set to work and made a machine after his own ideas. It was crude, perhaps, but it did the work, and on this machine was made the first piece of perforated sheet metal ever used in the refining of sugar. Success at first, or in fact, for a few years, was not great, as there was a prejudice against the use of perforated metal. This prejudice gradually wore away, and Mr. Mundt, believing that he was on the right track, stuck to the business of perforating sheet metals until his death in 1882, at which time he was running two presses, which were quite sufficient for his requirements.

With the death of Mr. Mundt the management of the business fell upon his sons, Charles Mundt, Jr., and Otto Mundt, who successfully carried on and increased its volume by adding another press. A few years later both sons died, about nine months apart, leaving in line to assume the management of the business William C. Mundt, then 19 years of age, who took charge in 1898, the plant then comprising three presses and a small machine shop. In the nine years since William C. Mundt became the manager the business has enlarged until the firm is now running 12 perforating presses, a large machine shop and all necessary tools for manufacturing anything in the line of perforated sheet metals that may be required.

In 1906 Chas. Mundt & Sons decided to build their own plant, as the space occupied by them was wholly inadequate at that time for the steadily growing business. Purchasing 11 lots in Jersey City, N. J., a factory building and storage and office building, covering in all about 25,000 sq. ft., have been erected. The buildings are of brick, with concrete foundations, and are complete and up to date in every respect. The power to run the plant, which is located at 51, 53 and 55 Fairmount avenue, is furnished by a 75-hp. gas engine, in connection with a gas producer plant, which furnishes the gas. The buildings are lighted by electricity furnished by a dynamo on the premises. The buildings are also piped for gas, thereby insuring sufficient light in case of any accident to the dynamo, and are heated by a low pressure boiler.

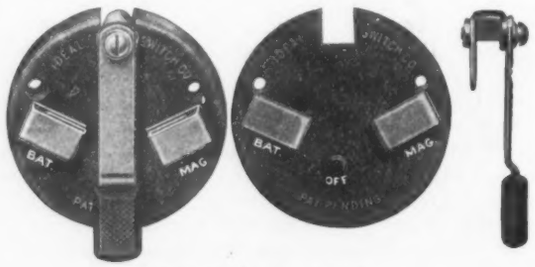
MISCELLANEOUS NOTES.

Stevens Repeating Gallery Rifle No. 80.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., announces that its No. 80 repeating gallery rifle in .25 caliber is now ready for the market. This model is made to take the .25 Stevens rim fire cartridge, and, it is stated, is the only .25 rim fire repeating rifle manufactured. The rifle is referred to as having the characteristic Stevens features, moderate in price, of excellent quality and a first-class shooter.

The Ideal Auto Switch.

The Ideal auto switch, shown in the illustration, is designed for use in automobiles and motor boats, and has as a feature an arrangement by which the owner may leave his machine or boat with entire assurance that its engine cannot be started during his absence. The switch is so constructed that when the blade seen in the illustration is taken out the connection is completely severed, and no substitute, such as a nail or piece of wire, can be inserted to make the connection. The peculiar copper spring clips or contact points into which the blade slides makes a positive and clean connection each time the blade is moved. The point marked "off" is so constructed that it can be used as a ground for high tension

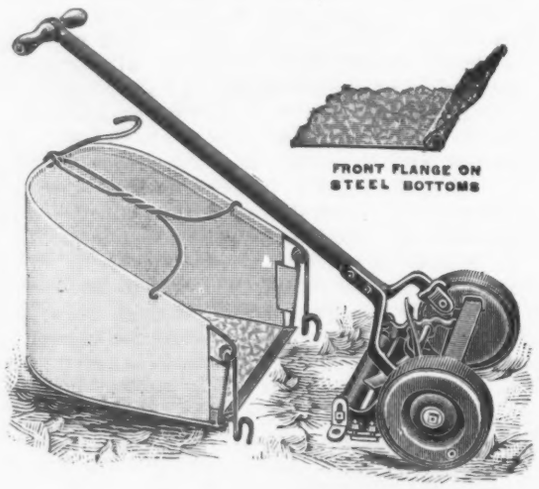


The Ideal Auto Switch.

magneto, and also holds the blade in the center between contact points. When the blade is inserted in any position it is self-locking. The device is manufactured by the Ideal Switch Company, Inc., Plainville, Conn.

New Type Easy Emptying Grass Catcher.

The Specialty Mfg. Company, St. Anthony Park, Minn., is offering its easy emptying grass catcher in the new style shown herewith. It has an improved iron handle with eye bracket and hook. The hook is permanently attached to the catcher and fits over the handle of the mower. When detached it drops down parallel with the handle of the grass catcher. It is explained that the grass catcher can be readily detached from the lawn



New Type Easy Emptying Grass Catcher.

mower with one hand and lifted off to empty into wheelbarrow, basket, &c. Catchers are made of heavy duck and galvanized iron, and are offered with duck or galvanized steel bottoms, the lattter having a flange in front, as illustrated, which prevents the grass from being carried against the roller and adds to the holding capacity of the catcher. Two sizes are offered, one for mowers from 12 to 18 in. wide and a larger one for 18 to 22 in. machines. It is stated that the catchers can be perfectly adjusted as to width, distance back from the roller and hight from the ground.

RUGG-BALL MFG. COMPANY, Waterville, Quebec, has been incorporated to consolidate the Canadian Hand Hay Rake business of Rugg Mfg. Company, Greenfield, Mass., and the Dominion Snath Company, Waterville, Quebec. The new company will have the control in Canada of the Rugg Mfg. Company's patent Steel Tube Bow Rake, the sale of which will be energetically pushed. For present use a part of the plant of the Dominion Snath Company has been rented, but the company expects soon to outgrow available quarters there, as other lines of manufacture will be added in the near future.

Ferodowill Skate Grinding Holder.

The Ferodowill Mfg. Company, St. Paul, Minn., is offering the holder to be used in connection with grinding skates, shown in the accompanying illustrations. The

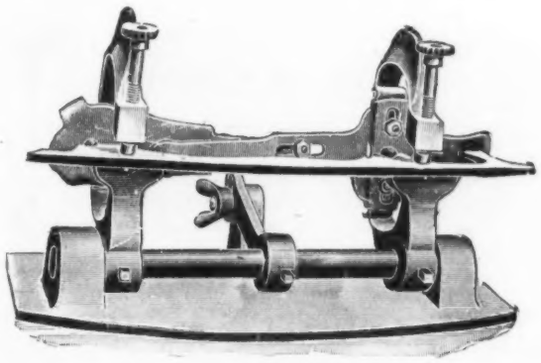


Fig. 1.—Skate Grinding Holder.

holder is designed for use in grinding any kind of a skate on any kind of an emery wheel. Between the clamping arms is an adjustable arm which is regulated by noting

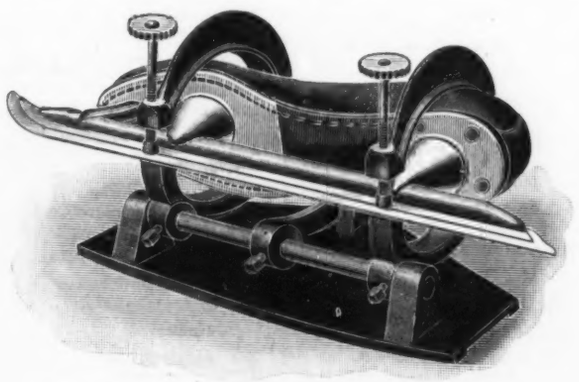


Fig. 2.—Holder with Skate on Shoe.

the surface ground by the emery wheel, so as to hold the skate in proper position. The adjustment is made by turning the wing nut, which raises or lowers the skate. The holder can be used on any emery wheel by attaching a plate to the grinder at such a hight as to bring the skate nearly opposite the center of the wheel. The skate clamping screws are protected with spun brass bushings to prevent their marring the finest nickel skate, yet holding the skate in place with a firm spring grip. The company also manufactures grinders for use in connection with the holder.

Diamond Wood Frame Grindstones.

The Whitman & Barnes Mfg. Company, Chicago, has added to its line of grindstones the Diamond wood frame bi-pedal, here illustrated, which is offered in three sizes,

Diamond Wood Frame Bi-Pedal Grindstone.

numbered 100, 200 and 300, respectively. The same machine is also offered in plain wood frame in Nos. 1, 2 and 3, corresponding. The frames are made of hard maple, thoroughly seasoned, and the legs are gained to fit the sides, being fastened at each end of the frame by a bolt and separator. On the bi-pedal machine the sides of the frame are extended to form the seat support, and the construction is said to be simple, producing great power with slight foot movement. Both plain and bi-pedal frames are described as standing solid when in service and well painted and finished. Stones run in W. & B. antifriction roller bearings, making them of especially light draft.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, State and Western, raw	@43
City, Boiled	@46
City, Raw	@45
Raw, Calcutta, in bbls	@..
Lard, Extra Prime, Winter	@77
Extra No. 1	@56
No. 1	@52
Cotton-seed, Crude, f.o.b. mill	@30
Summer Yellow, prime	@38¾
Summer White	@42
Yellow Winter	@45
Sperm, Crude	@60
Natural Winter	@74
Bleached Winter	@76
Bleached Winter, Extra	@..
Tallow, Prime	@60
Whale, Crude	@36
Natural Winter	@48
Bleached Winter	@51
Extra Bleached Winter	@54
Menhaden, Brown, Strained	@42
Light Strained	@42
Northern	@..
Southern	@..
Cocoanut, Ceylon	₱ lb 7¼@..
Cochin	₱ lb 8½@..
Cod, Domestic, Prime	@44
Newfoundland	@46
Red, Elaine	@46
Saponified	₱ lb 6 @ 6¼
Olive, Yellow	@75
Neatsfoot, Prime	@58
Palm, Lagos	₱ lb 6¼@ 6½

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	@13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light filtered	20½@21
Dark, filtered	18 @19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	11 @11½
Red	13½@14

Miscellaneous—

Barytes:		
White, Foreign	₱ ton	$18.50@20.50
Amer. floated	₱ ton	19.00@20.00
Off color	₱ ton	13.00@16.50
Chalk, in bulk	₱ ton	3.00@ 3.25
In bbls	₱ 100 lb	....@ .35
China Clay, Imported	₱ ton	11.00@17.50
Cobalt, Oxide	₱ 100 lb	2.50@ 2.60
Whiting, Commercial	₱ 100 lb	.43@ .52
Gilders	₱ 100 lb	.55@ .65
Ex. Gilders	₱ 100 lb	.60@ .65

Putty, Commercial—₱ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—₱ gal.

In Oil bbls	47½@48
In machine bbls	48 @48½

Glue—

	₱ lb
Cabinet	12 @15
Common Bone	7½@ 9
Extra White	18 @24
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—

	₱ lb
Bleached, Commercial	28 @30
Bone Dry	35 @37
Button	40 @50
Diamond I	50 @52
Fine Orange	31 @35
A. C. Garnet	41 @43
G. A. L.	25 @26
Kala Button	20 @22
D. C.	53 @54
Octagon B	51 @52
T. N.	26 @27
V. S. O.	50 @52

Colors in Oil—

	₱ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	₱ lb
Lead, English white, in Oil	10¾@10¾
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 7
Lots less than 500 lb, in Oil	@ 7½
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1¼

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	₱ lb
Zinc, American, dry	5⅝@ 5½
Zinc, French:	
Antwerp, Red Seal, dry	8¼
Antwerp, Green Seal, dry	10½
Paris, Red Seal, dry	8¾
Paris, Green Seal, dry	10¾

Zinc, V. M. French, in Poppy Oil:
Green Seal:
Lots of 1 ton and over 12⅞@13⅜
Lots of less than 1 ton 13¼@13⅝
Zinc, V. M. French, in Poppy Oil:
Red Seal:
Lots of 1 ton and over 11⅜@11⅞
Lots of less than 1 ton 11⅝@12⅛
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	₱ lb
Black, Carbon	6½@10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	30 @33
Blue, Prussian	28 @32
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls., kegs.	@ 7¼
Litharge, bbls., ½ bbls., kegs.	@ 7¼
Ocher, American	₱ ton $8.50@16.00
American Golden	2½@ 3¼
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	11¾@12
German	10 @12
American	8¾@ 9
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	₱ 100 lb $0.50@1.25
English	₱ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1¼@ 2
American Burnt and Pow'd.	1½@ 2
Talc, French	₱ ton $18.00@25.00
American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb .90@ 1.00
English	₱ 100 lb .80@ 1.00
American	₱ 100 lb, No. 1, .75@ .80
American	₱ 100 lb, No. 2, .60@ .65
Umber, Turkey, Bnt. & Pow.	2 @ 3¼
Turkey, Raw and Powdered	2¼@ 3½
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow Chrome, Pure	12 @14
Vermilion, American Lead	7 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@66
English, Imported	65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33⅓%
Norton 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ½ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ½ doz. pairs .....$2.00@$3.00

Anvils—American—

Eagle Anvils.....½ lb @8¼¢
Hay-Budden, Wrought.....9½@9¾¢
Trenton .....½ lb 9½@9¾¢

Imported—

Peter Wright & Sons, ½ lb, 84 to 349 lb. 11¢; 350 to 600 lb. 11½¢.

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....75@80%
Jennings' Pats., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings .....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—

Clark's Pattern, No. 1, ½ doz. $25; No. 2, $18.....60&10%
Ford's, Clark's Pattern.....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $36.00.....60&10%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$6.50@7.00
Ames .....25&10%
Universal 20%

Ship Augers and Bits—

Ship Augers.....40&10%
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' .....33⅓&7½%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@3¼¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—See *Grease, Axle*

Axles—*Iron or Steel*

Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose....3¾@4¼¢
No. 1½ Com., New Style..4½@5 ¢
No. 2 Solid Collar.....4½@5 ¢
Half Patent:
Nos. 7, 8, 11 and 12..65@65&10%
Nos. 13 to 14.....65@65&10%
Nos. 15 to 18.....70@70&10%
Nos. 19 to 22.....70@70&10%

Boxes, Axle—

Common and Concord, not turned lb., 5@6¢
Common and Concord, turned. lb., 6@7¢
Half Patent.....lb., 9½@10¢

Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50%
Pullman .....50&10&60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb., —@2½@2¾¢

Towel—

No. 10 Ideal, Nickel Plate..½ gro. $8.50

Beams, Scale—

Scale Beams.....40%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ½ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ½ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....½ doz. $1.50

Beaters, Egg—

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$0.50

Bellows—

Blacksmith, Standard List..
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

	6	7	8	9	10
Inch..					
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

	10	12	14	16
Inch..				
Doz..	$7.50	9.00	12.00	15.00

Net Prices.

Bells—Cow—

Ordinary Goods...75&5@75&10&5%
High grade.....70&10@75%
Jersey .....75&10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55&10%

Hand—

Polished, Brass.....50@50&10%
White Metal.....50@50&5%
Nickel Plated.....50%
Swiss 50%
Cone's Globe Hand Bells.....33⅓@35%

Miscellaneous—

Farm Bells.....lb., 2¼@2½¢
Church and School....60@60&5%

Belting—Leather—

Extra Heavy, Short Lap..69&5%
Regular Short Lap....60&10&5%
Standard .....70&5%
Light Standard.....75%
Cut Leather Lacing.....40&10%
Leather Lacing Discs, per sq. ft. 2½¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....70@70&5%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes.....50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....75%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed 50%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread): ⅜ × 6 and smaller..70&5@—%
Larger and longer.....65@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends.....65&5@—%
Machine (Cut Thread): ⅜ × 4 and smaller..70&7½@—%
Larger and longer...65&5@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

	3	4	5	6	8
Inch					
Per doz.	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

	6	8	10
Inch			
Per doz.....	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

	6	8	10
Inch.....			
Per doz.....	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

	6	8	10
Inch.....			
Per doz.....	$0.75	.95	1.25

Wrought Barrel Japd..80@80&10%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10%
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

Expansion—

Richards Mfg. Co.....50&10%

Plow and Stove—

Plow .....65&5@—%
Stove .....85@85&5%

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99.....80%
Phila., Eagle, list Oct. 16,1884..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:

	1¼	1½	1¾	2
Inch.....				
Per doz....	$4.80	5.60	6.40	8.00
Inch			2¼	2½
Per doz.....			$8.65	11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 45%

Braces—

Common Ball, American....$1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat..60&10%

Brackets—

Wrought Steel.....70&10@75&10%
Bradley Metal Clasp..80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....½ doz. $1.50

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

Buckets, Galvanized—

M'f'gr's list, price per gross.

	Quart	10	12	14	
Water, Reg		25.35	28.00	32.00	*10&5%*
Water, Hvy		45.35	48.00	52.00	
Fire, Rd. Btm.		32.00	34.65	38.65	
Well		37.35	41.35	45.35	

Bull Rings—See *Rings, Bull*

Butts—Brass—

Wrought, High List, Oct. 26,'06.55%
Cast Brass, Tiebout's.....45%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—*Bright.*

Light Narrow, Light Reversible .....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin, 40&5&
Light Narrow, Ball Tip..60%
Broad .....40&5%
Steeple Tipped.....70%
Ball Tipped.....70%

Extra 10@—

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze; Series 700, 800..30%
Hendryx Enameled 35%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong, per lb., 4¼@4¾¢
Sharp, 1 prong, per lb., 4¾@5¼¢
Burke's, Blunt 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¾¢; Sharp 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B ..... 52@55¢
G. D ..... *per M* 34@35¢
F. L ..... *per M* 40@42¢
G. E ..... *per M* 48@50¢
Musket ..... *per M* 62@63¢

Primers—

Berdan Primers, $2 per M ..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:

32 C. F., $5.50 ..... 10&5%
38 C. F., $7.00 ..... 10&5%
22 cal. Rim, $1.50 ..... 10&5%
32 cal. Rim, $2.75 ..... 10&5%
B. B. Caps, Con. Ball, Sicyd.$1.50
B. B. Caps, Round Ball $1.49
Central Fire 25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting 50%
Rim Fire, Military ..... 15&5%

Casters—

Bed ..... 65&10%
Plate ..... 60&5%
Philadelphia ..... 70&10%
Acme, Ball Bearing 35%
Gem (Roller Bearing) .....70&10&10&5%
Steel Gem 20%
Standard Ball Bearing 45%
Yale (Double Wheel) low list..40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$8.77	6.17	5.02	4.57	4.37	4.27	4.22
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$4.17	4.07	4.02	4.12			

In cask lots, deduct 25¢.

German Coil:
6-0 to 1 ..... 70&5@70&10%
2 and 3 ..66&10&10@60&10&10&5%
4, 5 and 6 .....50&10@50&10&5%

Halter—

Halter Chains ..... 60@60&5%
German Pattern Halter Chains, list July 24, '97 .....60&10&5%
Covert Mfg. Co.
Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring.$28.00
6½—6-2, Straight, with ring.$29.00
6½—8-2, Straight, with ring.$32.00
6½—10-2, Str'ght, with ring.$37.00

NOTE.—Add 2c per pair for Hooks. Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c..60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron ..... 60&10%
Brass 60%
Safety and Plumbers' Chain, 60&10%
Gal. Pump Chain....lb. 4½@4¾%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain 70%
Universal Dbl.-Jointed Chain..... 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain 60%
Pullman:
Bronze Chain, 60%; Steel Chain 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft ..... $1.25@$3.00
Sash Ribbon Attachments, per set.8¢

Chalk—(From Jobbers.)

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 45@50¢
Carpenters' White...gro., 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 50%
Youths' Chests, with Tools 35%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters,' etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty 45%
Tool Cabinets 45%
[illegible] Jennings & Co.'s Machinists' Tool Chests 7½%

Chisels—

Socket Framing and Firmer

Standard List ..... 75&10@—%
Buck Bros. 30%
C. E. Jennings & Co.:
Socket Firmer No. 10 .....25&7½%
Socket Framing No. 15 .....25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White Co. .....30@30&5%

Tanged—

Tanged Firmers .....30&5@35%
Buck Bros. 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co. ..... 25&5%

Cold— lb.

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks 35%
Almond Turret Six-Tool Chuck..... 40%
Beach Pat., each $6.00 .....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks 35%
Pratt's Positive Drive 25%
Skinner Patent Chucks:
Independent Lathe Chucks 35%
Universal, Reversible Jaws 35%
Combination, Reversible Jaws....35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive 10%
Planer Chucks 20%
Face Plate Jaws 35%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21 .....35%
Scroll Combination, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 35, 34 and 33..25%
Independent Iron, Nos. 18 and 318..50%
Independent Steel, No. 64 ..... 25%
Unio Drill, Nos. 000, 00, 100, 101, 102, 03, 104 ..... 35%
Union Czar Drill 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42 ..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50 ..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill 50%
Scroll Combination Lathe..... 50%

Clamps—

Adjustable, Hammers' .....20@20&5%
Carriage Makers', P. S. & W. Co. ..... 50&10%
Reslv. Parallel ..... 33⅓&10%
Myers' Hay Rack 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers, Hammers' ..... 40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel, ℔ doz. $4.05 net
Star Shank, All Steel, ℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros. 30%
Fayette R. Plumb 30%
L. & I. J. White Co 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each..... $8.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 25 & 10

Clips, Axle—

Regular Styles, list July 1, '05, 80&10&10%

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Ribbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... 70@—%
Compression Ribbs..60&10@—%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods .....70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers 60%
Lodi Dividers ..... 70&10%

Conductor Pipe,—

L. C. L. to Dealers:

	Galvanized		
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*	
Eastern:			
70%	50&17½%	45%	
Central:			
70&5%	55%	45%	
Western and Southern:			
65&10%	50&2½%	40&5%	
So. Western			
65&5%	45&5%	40&2½%	

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled 10%
Agate Lined 10%

Coopers' Tools—

See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 24@27¢; lighter than 3 lb. to pair .....26@29¢

Cord— Sash—

Braided, Drab ..... lb. 35¢
Braided, White, Com., Nos. 8 to 12, 23¢; No. 7, 23½¢; No. 6, 24½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India .....lb., 11@11½¢
*Cotton Sash Cord, Tw'ted.*18@20¢
Patent Russia ..... lb. .20¢
Cable Laid Russia ..... lb. ...21¢
India Hemp, Br'd'd ..... lb. ...21¢
India Hemp, Twisted ..lb.13@14¢
Patent India, Twisted...lb... 17¢
Pearl Braided Cotton, No. 6, ℔ lb, 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10 ..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord 10%
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord ..... 50¢
Massachusetts, White.... ℔ lb 40¢
Massachusetts, Drab.... ℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢; } 15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906 .....90@—%
Hendryx Standard Wire Picture Cord, old list. 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

Cradles—

Grain ..... 40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber, ℔ gro. White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.00
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $10.25; Indelibles $18.75
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16 ..... $3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son ..... ℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co. 40%
Red Devil 60%
B. Mfg. Co. 40%
Woodward 50%

Meat and Food—

American 30%
Nos., ... 401 402 403 404 405 406 407
Each .. $5 $7 $10 $12 $25 $50 $60
Enterprise:
Nos.... 5 10 12 22 32
Each .. $2 $3 $2.75 $1.50 $6 25@25&7½%
No. 202, $1.50 ..... 40&7½%
P. S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%
Nos... 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant..... ℔ doz. 40@50%
Nos.. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
New Triumph No. 605, ℔ doz, $24.00, 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

Tobacco—

All Iron, Cheap..doz. $1.25@$1.50
Enterprise ..... 25&30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00 ..... 25%
Samson, ℔ doz., $34.00 ..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz. $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00 ..... 60%

Dividers—See Compasses.

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines ..... $1.50@$1.75
Breast, Millers Falls ..... List 10%
Breast, P., S. & W. 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 012 ..... 40%
Ratchet, Celebrated 40%
Ratchet, Whitney's, P., S. & W. ..... 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 .....33⅓%

Twist Drills—

Bit Stock .....60&10&10@70%
Taper and Straight Shank ..... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Baisey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in. ℔ 50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Fay's Double Action Ratchet 35%
Goodell's Auto ..... 65@65&10%
Mayhew's Black Handle 40%
Mayhew's Monarch 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized*	
Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:		
75&5%	60&10%	45%
Central:		
75&10%	65%	45%
Western and Southern:		
75%	60&5%	40&5%
So. Western:		
70&10%	55&7½%	42½%

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:

Galv. Steel	*and Galv. C. I.*
Standard Gauge	80%
No. 26	50%
No. 24	25%
No. 22	10%
Copper	80&10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	4 to 16:	*5½ to 220:*	*Flour.*
Kegs .....lb.	5 ¢	5½¢	5½¢
½ Kegs.....lb.	5½¢	5¾¢	5¾¢
¼ Kegs.....lb.	5½¢	6 ¢	6 ¢
10-lb. cans, 10 in case....6½¢		7 ¢	6 ¢
10-lb. cans, less than 10.....10 ¢		10 ¢	7 ¢
Less quantity..10 ¢		10 ¢	8 ¢

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....40&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..40%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ₱ doz. $36.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade...75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

P., S. & W. Co.....25%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Meader.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} *10&2½%*

Gates, Molasses and Oil—
Stebbins' Pattern.....75@80%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade....gro. $6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 80¢; in boxes, ₱ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $3.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₱ inch, ₱ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&5@60&10%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers' .....40&10&5%
Riveting 50%
Machinists', revised list.....66⅔&5%
Blacksmiths' .....50&5%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢..80&5@—%
3 to 5 lb., per lb., 40¢..80&5@—%
Over 5 lb., per lb., 30¢.....80&10&5@—%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c.....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $3.00@$3.50
Brad Awl.....gro. $1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@$2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@$1.95; Hickory....$1.60@$1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.....₱ gro. $0.85@$1.50
W. A. Zelnicker Supply Co.:
Hammer, ₱ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₱ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₱ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₱ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₱ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₱ doz., 12 to 14 in., $2.00.
} 50%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
} Extra 10% often given.
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion $2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2.70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Parlor Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

Hangers— Garment—
Pullman Trouser, ₱ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro.....$10.50
Victor Folding.....₱ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ₱ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₱ doz..60%

Hatchets—
Regular list, first qual..40&2½@—
Second quality.....50&5@—

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ₱ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Acme, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₱ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets: *No.*	*1*	*2*	*3*
Hinges with L't'ches.	*$2.00*	*2.70*	*5.00*
Hinges only.....	*1.40*	*2.05*	*3.80*
Latches only.....	*.70*	*.70*	*.35*

New England:
With Latch.....doz. ....@$2.00
Without Latch...doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch...doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.: Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, Cast Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ₱ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Tripie End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ₱ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ₱ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf.....₱ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₱ gr. $9.00
Chief Ball Bearing Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₱ gr., pr.....$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap...60&5%
Cor. Ex. Heavy T...50&10%
} *Extra 10&7½%*

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
14 to 20 in..lb. 3½¢
22 to 36 in..lb. 3½¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch .....lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

Inch	*15*	*16*	*17*	*18*
Galv. Open...	*$35*	*$39*	*$42*	*$46*
Jap. Open....	*26*	*28*	*31*	*35*
Galv. Funnel.	*48*	*48*	*52*	*56*
Jap. Funnel..	*33*	*36*	*39*	*43*

} *10&5%*

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 25, 1899.....70&10@75&10%

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern).....60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Diamond Star.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Weeding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders—Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....35%
Richards Mfg. Co.: No. 117, Everready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs. $1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt.....80%
Wire C. & H. Hooks....75@—%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Rush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz.$3.00
Grass, common grades, all sizes, per doz......*$1.50*
Waffletree.....*lb. 5¾@6¢*
Hooks and Eyes:
Brass.....*60@60&10%*
Malleable Iron.....*70@70&10%*
Lover Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....*ft. 5@ 6¢*
3 ply Guaranteed.....*ft. 8@ 9¢*
4 ply Guaranteed.....*ft. 10@11¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8@ 9¢*
Fair Quality.....*ft. 10@11¢*

Irons—Sad—

From 4 to 10.....*lb. 3@3¼¢*
B. B. Sad Irons.....*lb. 3¼@3½¢*
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Tops	85	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

Pinking—

Pinking Irons.....*doz.60¢*

Irons, Soldering

See *Copers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 150...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Wilmington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz.$5.50@5.75
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Miscellaneous—

Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.40*
Carriage, Jap., all sizes.....*gro. 40@45¢*
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....*doz.$4.35@4.50*
Side Lift, No. 0.....*doz.$4.60@4.75*
Hinge Globe, No. 0..*doz.$4.60@4.75*
Other Styles.....*40@40&10%*

Bull's Eye Police—

3-inch.....*$4.25@4.50*

Latches—Thumb—

Roggin's Latches, with screw..*doz. 35@40¢*

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.30
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.50*	*2.25*	*2.00*
75 feet	*$2.10*	*1.80*	*1.65*

Samson Cordage Works, Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 9, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft. $2.75; 60 ft. $3.25; 70 ft. $3.75; 75 ft. $4.00; 80 ft. $4.25; 90 ft. $4.75; 100 ft. $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines White Cotton.....20%
Shade Cord, Cotton or Linen....20%

Locks—Cabinet—

Cabinet Locks.....*33⅓%*

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power....₱ doz. $18.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone High Speed Chain Hoist.....25%

Ice Cutting—

Chandler's.....12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Applewood.....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T.....70&10&5%
Style A., all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list 40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous.....*87½@87½&10%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western.....₱ lb 8½¢
Jobbers' Special Brands.....*per lb.9@10¢*

Picture—

	1½	*2*	*2½*	*3*	*in.*
Brass H'd.	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head.	*..*	*1.10*	*1.10*	*1.10*	*.. gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Square, Blank or Tapped..4.80¢
Hexagon, Blank or Tapped..5.10¢
Square, Bl'k, C., T. & R...5.10¢
Hexagon, Bl'k, C., T. & R..5.70¢
Hot Pressed:
Square, Blank.....*5.90¢*
Hexagon, Blank.....*5.70¢*
Square, Tapped.....*5.80¢*
Hexagon, Tapped.....*5.60¢*

Oakum—

Best.....*lb.. 6¼¢*
U. S. Navy.....*lb., 6¢*
Navy.....*lb.. 5¢*
Plumbers' Spun Oakum..2¾@3¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....*75%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Zinc.....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers—Can—*Per doz.*

Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope.....*20@25¢*

Rubber—

(Fair grade goods.)

Sheet, C. I......*11@12¢*
Sheet, C. O. S......*11@12¢*
Sheet, C. B. S......*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

Miscellaneous—

American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Water, Well, &c.—

See *Buckets.*

Pans—Dripping—

Standard List.....*65&7½&10%*
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: *lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½@5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft......*6¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in......*3@5¢*
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....*48@58¢*
Medium weight, 30 lbs. to roll.....*56@70¢*
Heavy weight, 40 lbs. to roll.....*75@78¢*
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$54.50*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 400 sq. ft.), ton....*$34.00@$38.00*
2 ply, roll 108 sq. ft......*65¢*
3 ply, roll 108 sq. ft......*85¢*
Slater's Felt (roll 500 sq. ft.) .80¢

Sand and Emery—

Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth...*25%*
Emery Paper and Cl'h..50&10@60%

Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $25.00

Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20

Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

List, Feb. 25, 1899..70&10@70&10&5%
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85 ..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in. ....60&10@—%
Extra Heavy, 2-6 in. ..70&10@—%
Fittings, Standard and Heavy, 75&10@—%

Pipe, Merchant—

	Consumers, Carloads. Steel.		Iron.	
	Blk.	Galv.	Blk.	Galv.
	%	%	%	%
⅛ & ¼ in.	63	48	57	41
⅜ in.	66	52	59	41
½ in.	68	56	61	49
¾ to 6 in.	72	62	66	56
7 to 12 in.	69	54	61	46

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$6.15	$7.15
6 in., Uniform Color	6.65	7.65
7 in., Uniform Color	7.65	8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual .....30@30&10%
Bench, second qual ...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes
Chaplin's Iron Planes .....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06 .....25%
Buck Bros 30%
Chapin-Stephens Co 25%
Union 50%
L. & I. J. White .....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse .....⅌ doz. $8.00

Plates—
Felloe .....lb. 4@4¼¢

Pliers and Nippers—
Button Pliers ....75&5@75&10&5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe ..

7	8	10	12-in.
$2.00	$2.25	$2.75	$3.50

Acme Nippers .....50&5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button .....75&10%
Cronk's 60%
No. 80 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Heller's Farriers' Nippers, Pincers and Tools .....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels .....30@30&10%
Chapin's Imp. Brass Cor .....40@40&10%
Pocket Levels .....30@30&10%
Extension Sights .....30@30&10%
Machinists' Levels .....40@40&10%
Disston's Plumbs and Levels ....60&10%
Disston's Pocket Levels .....60&10%
Stanley's Duplex 30%
Woods' Extension 33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers ...lb. 9¼¢
½-lb. papers .....lb. 10 ¢
¼-lb. papers .....lb. 10½¢

Police Goods—
Manufacturers' Lists ...25@25&5%
Tower's 22%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ⅌ doz., $3.00; No. 2 (1 qu.), $9.00 .....40%
Prestoline Paste 60%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ⅌ doz. 50¢; ⅌ gro. $4.80; ½ lb boxes, ⅌ doz. $1.25; 1 lb boxes, ⅌ doz. $2.25.
U. S. Liquid, 8 oz. cans, ⅌ doz., $1.25.
Barkeepers' Friend Metal Polish, ⅌ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ⅌ lb 10¢
Black Eagle, Liquid, ⅛ pt. cans, ⅌ doz. 75¢
Black Jack Paste, ¾ lb cans, ⅌ gr. $9.00
Black Kid Paste, 5 lb can ....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon's, ⅌ gr. $5.75 .....10%
Dixon's Plumbago .....⅌ lb 8¢
Fireside .....⅌ gr. $2.50
Gem, ⅌ gr. $1.50 .....10%
Japanese .....⅌ gr. $3.50
Jet Black .....⅌ gr. $3.50
Peerless Iron Enamel, 10 oz. cans, ⅌ doz. $1.50

Poppers, Corn—
1 qt. Square ..doz. $0.88; gro. $8.75
1 qt. Round ..doz. $1.00; gro. $10.00
1½ qt. Square..doz. $1.10; gro. $11.00
2 qt. Square ..doz. $1.35; gro. $13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts .....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....30&10%

Powder—
In Canisters:
Duck, 1 lb .....each 45¢
Fine Sporting, 1 lb ....each 75¢
Rifle, ½-lb .....each 15¢
Rifle, 1-lb .....each 25¢
In Kegs:
12½-lb. keys $3.50
25-lb. keys $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $2.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—

Fruit and Jelly—
Enterprise Mfg. Co .....20@25%

Seal Presses—
Morrill's No. 1, ⅌ doz., $20.00 .....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ⅌ doz., $12.00 .....33⅓&10%
Morrill's No. 1, Nail Puller, ⅌ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 .....50%
The Scranton Co. Case Lots:
No. 2B (large) $5.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B 70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	2	2¼	2½
Hot House, doz.	$0.65	.85	1.20
Inch	1¼	1½	1¾
Screw, doz.	$0.16	.19	.23
Inch	1¾	2	2¼
Side, doz.	$0.25	.40	.55
Inch	1½	1¾	2

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in .....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in ....20@21¢
Acme, No. 35, 1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle .....17@20¢
Fox-All-Steel, Nos. 3 and 7, 2 in. ⅌ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in., 20½¢
No. 26, Trop., 1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26, 1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout .....75&5@75&10%
Wood Pumps, Tubing, &c 50%
Barnes Dbl. Acting (low list) ....40&5%
Barnes Pitcher Spout .....75&10%
Contractors' Rubber Diaphragm No. 2 R. & L. Block Co $16.00
Daisy Spray Pump .....⅌ doz. $8.50
Flint & Walling's Fast Mail Hand, (low list) 50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher. 75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 .....30%
Myers' Pumps (low list) .....40&5%
Myers' Power Pumps .....40&5%
Myers' Spray Pumps .....40&5%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.	2	2½	3	3½	4
	$3.10	3.70	4.35	4.95	5.60

Cup Leathers—Per 100:

Inch	2½	3	3½	4
	$3.89	4.75	6.20	8.80

Punches—
Saddlers' or Drive, good ..... doz. 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes) ....doz. $3.60
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 .....50%
Hercules, 1 die, each $5.00 .....50%
Niagara Hollow Punches 40%
Niagara Solid Punches .....35&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi 55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ⅌ doz., $1.44 .....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron .... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Allith Mfg. Co.: Reliable Hanger Track 30%
Crook's:
Double Braced Steel Rail..⅌ ft. 3¼¢
O. N. T. Rail $3.12
Griffin's:
xxx, ⅌ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ⅌ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ⅌ 100 ft. $3.45
O. N. T., ⅌ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. .....⅌ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ⅌ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 .....55&7½%
McKinney's:
Hinged Hanger Track, ⅌ ft., 11¢, 60&5%
1 x 3-16 Track .....55&7½%
Myers' Stayon Track .....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65 .....50%
Gauge Trolley Track, ⅌ ft., No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.
No. 50 .....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor .....80&25%
Queen City Lawn, ⅌ doz., 20 teeth, $2.85; 24, $3.00 .....net
Anticlog Lawn, ⅌ doz. $4.00
Malleable Garden .....70&10%
Ideal Steel Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 .....80%
Kohler's:
Lawn Queen, 20-tooth....⅌ doz. $3.15
Lawn Queen, 24-tooth....⅌ doz. $3.25
Paragon, 20-tooth .....⅌ doz. $2.70
Paragon, 24-tooth .....⅌ doz. $2.75
Steel Garden, 14-tooth....⅌ doz. $2.40
Malleable Garden, 14-tooth, ⅌ doz. $2.00@2.25

Rasps, Horse—
Disston's 75%
Heller Bros .....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard, 60&10&5%
New Nicholson .....70&10@75%
See also Files.

Razors—
Liana Bo-ras-ic 60%
Fox Razors, ⅌ doz., No. 42, $18.00; No. 44, $20.00; No. 82, Platina, $25.00. } net
Red Devil 65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum German Silv., Bronze.25%
1240 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 .....25%
4 N, 6 PN, 24 N, 96 PN 20%
2904 P, 33¼%; 2904 PN, 33¼%; 0024 N., 33¼%; 02284 N., 33¼%; 002904 PN., 33¼%; 802 N., 33¼%.
986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN 33¼%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 66⅔%
White Porcelain Enamel 60%
Solid Brass or Bronze Metal ..25%

Revolvers—
Single Action .....$5¢@$1.00
Double Action, except 44 cal. .$2.00
Double Action, 44 caliber $2.00
Automatic $3.50
Hammerless $4.50

Riddles, Hardware Grade
16 in. .....per doz. $2.50@$2.75
17 in. .....per doz. $2.75@$3.00
18 in. .....per doz. $3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes $4.25
Hill's Ringers, Gray Iron, doz. 60¢
Hill's Ringers, Malleable Iron, doz. 80¢
Blair's Rings .....per gro. $3.50
Blair's Ringers .....per doz. 75¢
Brown's Rings .....per gro. $3.25
Brown's Ringers ....per doz. 75¢

Rivets and Burrs—
Copper .....40&10@50%
Carriage, Coopers', Tinners, &c.:
Black .....70&10%
Metallic Tinned 70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50 .....$1.00
Cronk's Bracket off No. 55, $0.60; No. 56, $0.75; No. 60 .....$0.75
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 .....50%
Underwriters', Nos. 59, 60 .....50%
Favorite, No. 54 .....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure .....lb., 11½@12¢
Sisal, 7-16 in. diam. and larger: Pure .....lb., 8¢
Sisal, 7-16 in. diam. and larger: No. 2 quality .....lb., 7@7¼¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed .....lb., 7@7¼¢
Pure .....lb., 9¼¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed .....lb., 6¼@6¾¢
Pure .....lb., 7¼¢
Cotton Rope: Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. & up, lb., 7½@8¢
Thread, No. 2, ¼-in. & up, lb., 7@7½¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal 20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination 55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood .....35&10%
Folding, Steel .....33⅓&10%
Lufkin's Steel .....50&10%
Lufkin's Lumber .....50&10%
Unson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1⅜ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A .. 25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds File Co. 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades .... 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $15; with boring attachment, $20 .... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—

Family, Turnbull's .... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to ¼ lbs. ..... doz., $5.50
Two Platforms, ½ oz. to 8 lbs. ..... doz., $16.00
Union Platform, Plain. $1.70@1.90
Union Platform, Stpd. $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle .... doz. $2.00@2.25
Box, 2 Handle .... doz. $2.50@2.60
Ship .... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box .. 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood .. 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... 75&10&10%
Coach, Gimlet Point .. 75&10&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron ..... 87½&5@.. %
Round Head, Iron ..... 85&5@.. %
Flat Head, Brass ..... 80&5@.. %
Round Head, Brass .. 77½&5@.. %
Flat Head, Bronze .... 75&5@.. %
Round Head, Bronze .. 72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—

See *Saws, Scroll.*

Scythes—

	Per doz.
Grass, No. 1, Plain	$6.25@6.75
Clipper, Bronzed Webb	$6.50@7.00
No. 3 Clipper, Pol'd Webb	$6.75@7.25
No. 6 Clipper and Solid Steel	$7.00@7.50
Rush, Weed and Bramble, No. 2	$6.50@7.00
Grain, No. 1	$8.25@8.75
Bronzed Webb, No. 1	$8.50@9.00
Nos. 3 and 4 Clipper, Grain	$8.75@9.25
Solid Steel, No. 6	$9.25@9.75

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ₱ doz sets $9.00

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Cannon's Diamond Point, ₱ gro. $12, 40&10%
Mayhew's ..... ₱ gro. $9.90
Snell's Corrugated, Cup Pt. .. 40&10%
Snell's Knurled, Cup Pt. .... 40&10%
Victor Knurled Cup Pt. .... ₱ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ₱ doz. $8.00
Royal, Hand ..... ₱ doz. $4.50
Taintor Positive ..... ₱ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ₱ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₱ doz $1.50
Mounted Kitchen Sand Stone, ₱ doz $1.50
Natural Grit Carving Knife Hones, ₱ doz $3.00
Quick Cut Emery Carving Knife Hones, ₱ doz $1.50
Quick Edge Pocket Knife Hones, ₱ doz $2.50

Skate—

Smith & Hemenway Co., Eureka .. 50%

Shaves, Spoke—

Iron ..... doz. $1.10@1.25
Wood ..... doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ₱ doz. $9.00 ..... 15&10%

Shears—

	7	8	9 in.	
Cast Iron				
Best	$16.00	18.00	20.00	gro.
Good	$13.00	15.00	17.00	gro.
Cheap	5.00	6.00	7.00	gro.

Straight Trimmers, &c.:
Best quality Jap .... 70@70&10%
Best quality, Nickel .. 60@60&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6¼ to 10 in. ..... 33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%:
W. R. W. ..... 40&10%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ₱ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%
Expert, 10, 12, 16 and 20 gauge, 33⅓&5%

Shells, Loaded—

Loaded with Black Powder .. 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:

	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ₱ keg $3.90

Shot—

	25-lb. bag
Drop, up to B	$1.85
Drop, B and larger	2.10
Buck	2.10
Chilled	2.10
Dust	2.30

Shovels and Spades—

Association List, Nov. 15, 1902. 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $3.25@$3.50
Wood and Mall. D. Handle ..... $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation ..... gro. $9.50@10.00
Hunter's Genuine ..... per gro. $12.00@12.50

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₱ doz. $39.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh	14	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh ... Nested .... doz. $0.90@0.95
... ted .... doz. $1.00@1.05
44, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in 60%
20 x 40 to 24 x 50 in 50%
24 x 60 to 24 x 120 in 30%
Barnes' low list:
Up to and including 20 x 36 in 50%
20 x 40 to 24 x 50 in 45%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&5 tens
Victor A, Noiseless .60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe ..... 55@60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 35%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... ₱ doz. $1.10

Carriage, Wagon, &c.—

	Per 100 lb.
1¼ in. and Wider:	
Black	$4.75@$5.00
Half Bright	$4.75@$5.00
Bright	$5.25@$5.50
Painted Seat Springs:	
1½ x 2 x 26 ..... per pr.	49@52¢
1½ x 3 x 28 ..... per pr.	73@77¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ₱ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. } List Jan. 5, 1900.
Steel and Iron .. } 75&10@80%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.25
Iron, Porcelain Lined ..... doz. $1.75

Staples—

Barbed Blind ..... lb. 6@6½¢
Electricians', Association list .. 80&10&10&10%
Fence Staples, Plain, $2.15; Galvanized $2.45
Poultry Netting Staples ..... per lb. 3½@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'bie Ratchet Die Stock .. 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ₱ lb
Arkansas St. No. 1, 3 to 5½ in. .. 42.50
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $1.00
Lily White Washita, 4 to 8 in. 80¢
Rosy Red Washita, 4 to 8 in. .60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, R'g'lar, ₱ lb 8¢
Hindostan No. 1, Small, ₱ lb 10¢
Axe Stones (all kinds) 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in. ..... ₱ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.00
Green Mountain S. S., ℔ gro. $6.00
Extra Indian Pond S.S., ℔ gro. $7.50
No. 1 Indian Pond S.S., ℔ gro. $7.00
No. 2 Indian Pond S.S., ℔ gro. $4.50
Leader Red End S. S., ℔ gro. $4.50
Quick Cut Emery, ℔ gro. $10.00
Pure Corundum, ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00..... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stephens Co..... 20%

Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, dos. 60@60&10%
Socket ..... doz. $1.66
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00..... 20%

Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ℔ doz.
Superba, Crotch Mahogany..... $36.00
Triumph, Fancy Veneers..... $33.00
Parlor Queen, Fig. Rosewood.. $30.00
Elite, Hungarian Ash..... $29.00
Am. Queen, Fig. Mahogany.... $27.00
Ideal, Bird's-Eye Maple..... $25.00
Grand Rapids, Nickel, $24.00; Japan $22.00
Standard, Nickel, $22.00; Japan.$20.00
Crown Jewel, Nickel, $21.00; Jap.$19.00
Crystal, Glass Top..... $36.00
Grand, 17 in. wide..... $36.00
Club, 24 in. wide..... $54.00
Hall, 28 in. wide..... $60.00

NOTE.—Rebates: 50c *per dozen on three dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten-dozen lots;* $2.50 *per dozen on twenty-five dozen lots.*

Tacks, Finishing Nails, &c.

American Carpet Tacks...90&25%
American Cut Tacks.....90&25%
Swedes' Cut Tacks.....90&25%
Swedes' Upholsterers'....90&35%
Gimp Tacks.....90&35%
Lace Tacks.....90&35%
Trimmers' Tacks.....90&25%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&40%
Hungarian Nails.....80&10%
Finishing Nails.....70%
Trunk and Clout Nails.....80%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks..... 90&10@90&10&10&5%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
120	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin ..50@—%
Patent Leather.....25@30&5%
Steel ..... 33 1-3&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin.....40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ¾-inch and larger... *per 100 lbs.* $2.75@$3.00

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c......30@33⅓%

Ties, Bale—Steel Wire—

Single Loop.....80&10&5%
Monitor, Cross Head, &c..70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Haying—

Myers' Hay Tools..... 45%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simonds' Improved..... 33⅓%
Simonds' Crescent..... 25%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Limitation Oneida...75@75&10&5%
Newhouse ..... 45@45&5%
Hawley & Norton..... 65%
Victor ..... 75@75&10%
Oneida Community Jump..... 50%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50... $5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz....$0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes, .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston " Standard Brand " and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ℔ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized.	$67	$79	$89	$99

10%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls.23@25¢
No. 12, ¼ and ½-lb. Bal.s..21@24¢
No. 18, ¼ and ½-lb. Balls.18@20¢
No. 24, ¼ and ½ -lb. Balls. 17½@19½¢
No. 36, ¼ and ½-lb. Balls.17@19¢
Chalk Line, Cotton ½-lb. Balls .....26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....11@19¢
Cotton Wrapping, 5 Balls to lb., according to quality...15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls.....14½@15½¢
American 3-Ply Hemp. 1-lb. Balls .....15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls. 10@11¢
2, 3, 4 and 5-Ply Jute. ½-lb. Balls .....13½@14½¢
Mason Line, Linen, ½-lb. Bls.17¢
No. 2½ Mattress, ¼ and ½-lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 9¢; A 10¢

Vises—

Solid Box.....50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co..... 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel..... 25%
Star, Solid Jaw..... 40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip.....15%
Merrill's 20%
M'llers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars.....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 127 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up.....50¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Dis. 15%

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....33⅓%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles..... 60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles..... 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $3.55
Cable Cross, family size, stationary protector..... $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe..... $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.95

Washers—Leather, Axle—

Solid .....70&10@90&10%
Patent .....90@90&5%
Cost: ¾ 1 1¼ 1½ *Inch.*
11¢. 12¢. 13¢. 15¢. *per box*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers...$5.90 5.00 3.70 3.50 3.30
The above prices are based on $5.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... *per lb.* 1¼@2¢

Wedges—

Oil Finish.....*lb.*...@3¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District.....$30.00
Southern Territory..$24.00@25.00
Western and Central Districts .....$25.00@28.50

Wheels, Well—

8-in., $2.22; 10-in., $2.82; 12-in., $3.36; 14-in., $4.80.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....17¼¢ *lb., base*
Copper .....32¢ *lb., base*
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned....70&10%
Brass and Copper.....60&10%
Retailers' Assortments, per box. $2.10@$2.40
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods.90&20@90&25%
Brass Wire Goods....90@90&10%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.30
Standard Galv. Hardware Grade: Per 100 sq. ft.
Nos. 2, 2½ & 3 Mesh.....$2.50
Nos. 4 and 5 Mesh.....$2.75
No. 6 Mesh.....$3.00
No. 8 Mesh.....$3.50

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....75@75&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut..... 50%
Combination Black..... 40&5%
Merrick Pattern..... 50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' " Mechanics' "...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&5%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases..... 50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Railroad Special, Iron Handle, 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92..... 90%

Zinc— (*Cask lots at mill.*)

Sheet.....*per 100 lb., $7.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.

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